EAX-H110KP

Intel® 6/7th Generation Core™ Processor ATX Motherboard With Intel® H110 Chipset

User's Manual

2nd Ed –14 August 2020

Part No. E2047AK1101R

FCC Statement



THIS DEVICE COMPLIES WITH PART 15 FCC RULES. OPERATION IS SUBJECT TO THE FOLLOWING TWO CONDITIONS:

(1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE.

(2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED INCLUDING INTERFERENCE THAT MAY CAUSE UNDESIRED OPERATION.

THIS EQUIPMENT HAS BEEN TESTED AND FOUND TO COMPLY WITH THE LIMITS FOR A CLASS "A" DIGITAL DEVICE, PURSUANT TO PART 15 OF THE FCC RULES.

THESE LIMITS ARE DESIGNED TO PROVIDE REASONABLE PROTECTION AGAINST HARMFUL INTERFERENCE WHEN THE EQUIPMENT IS OPERATED IN A COMMERCIAL ENVIRONMENT. THIS EQUIPMENT GENERATES, USES, AND CAN RADIATE RADIO FREQUENCY ENERGY AND, IF NOT INSTALLED AND USED IN ACCORDANCE WITH THE INSTRUCTION MANUAL, MAY CAUSE HARMFUL INTERFERENCE TO RADIO COMMUNICATIONS.

OPERATION OF THIS EQUIPMENT IN A RESIDENTIAL AREA IS LIKELY TO CAUSE HARMFUL INTERFERENCE IN WHICH CASE THE USER WILL BE REQUIRED TO CORRECT THE INTERFERENCE AT HIS OWN EXPENSE.

Notice

This guide is designed for experienced users to setup the system within the shortest time. For detailed information, please always refer to the electronic user's manual.

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2. Call your dealer and describe the problem. Please have your manual, product, and any helpful information available.
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4. Carefully pack the defective product, a complete Repair and Replacement Order Card and a photocopy proof of purchase date (such as your sales receipt) in a shippable container. A product returned without proof of the purchase date is not eligible for warranty service.
5. Write the RMA number visibly on the outside of the package and ship it prepaid to your dealer.

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1. Getting Started

1.1 Safety Precautions

Warning!



Always completely disconnect the power cord from your chassis whenever you work with the hardware. Do not make connections while the power is on. Sensitive electronic components can be damaged by sudden power surges. Only experienced electronics personnel should open the PC chassis.

Caution!



Always ground yourself to remove any static charge before touching the CPU card. Modern electronic devices are very sensitive to static electric charges. As a safety precaution, use a grounding wrist strap at all times. Place all electronic components in a static-dissipative surface or static-shielded bag when they are not in the chassis.

1.2 Packing List

Before you begin installing your single board, please make sure that the following materials have been shipped:

- 1 x EAX-H110KP motherboard
- 2 x SATA cables
- 1 x I/O Shield



If any of the above items is damaged or missing, contact your retailer.

1.3 Document Amendment History

Revision	Date	By	Comment
1st	October 2018	Avalue	Initial Release
2nd	August 2020	Avalue	Update System Specifications

1.4 Manual Objectives

This manual describes in details Avalue Technology EAX-H110KP Single Board.

We have tried to include as much information as possible but we have not duplicated information that is provided in the standard IBM Technical References, unless it proved to be necessary to aid in the understanding of this board.

We strongly recommend that you study this manual carefully before attempting to set up EAX-H110KP or change the standard configurations. Whilst all the necessary information is available in this manual we would recommend that unless you are confident, you contact your supplier for guidance.

Please be aware that it is possible to create configurations within the CMOS RAM that make booting impossible. If this should happen, clear the CMOS settings, (see the description of the Jumper Settings for details).

If you have any suggestions or find any errors regarding this manual and want to inform us of these, please contact our Customer Service department with the relevant details.

1.5 System Specifications

System	
CPU	Intel® LGA1151 Socket Supports 6/7th Generation Core™ i7/ i5/ i3 Processors (Max. TDP at 95W)
BIOS	AMI uEFI BIOS, 128Mbit SPI Flash ROM
System Chipset	Intel® H110 Express Chipset
I/O Chip	Nuvoton® NCT6106D
System Memory	Two 288-pin DDR4 2400MHz DIMM socket, supports up to 32GB Max
Watchdog Timer	5~255 seconds/5~255 minutes
H/W Status Monitor	CPU temperature monitoring Voltages monitoring CPU fan speed control
Expansion	1 x PCI-e x 16 2 x PCI-e x4 slot for 1 x PCI-e x4 or 2 x PCI-e x2 4 x PCI
S3/S4	Yes (S0/S3/S4/S5)
I/O	
USB	6 x USB2.0, 4 x USB3.0
GPIO	16 bits
Display	
Chipset	Intel® H110 Express chipset
Resolution	VGA: 2048 x 1536 @ 50 Hz HDMI: 4096 x 2160 @ 24 Hz, 2560 x 1600@ 60 Hz DP: 4096 x 2304@60Hz
Multiple Display	Dual Display
HDMI	HDMI: 3840 x 2160 @ 30 Hz, 2560 x 1600@ 30 Hz (Note: This resolution is actual test result. Intel resolution: 4096x2160@24Hz)
Audio	
AC97 Codec	Realtek ALC892-GR Audio codec
Audio Amp	1 x 4ohm/3W Amplifier
Audio Codec	Realtek ALC892 HD Audio Decoding Controller with 2W Amplifier
Ethernet	
LAN Chip	1 x Intel® I219LM Gigabit Ethernet PHY 1 x Intel® I211AT PCI-e Gigabit Ethernet
Internal I/O Connectors	
Fan	1 x 1 x 4 pin, pitch 2.54mm CPU fan connector with smart fan function supported

	1 x 1 x 4 pin, pitch 2.54mm System fan connector with smart fan function supported 1 x 1 x 3 pin, pitch 2.54mm System fan connector
CMOS Battery	1 x Vertical type battery connector Co-lay 1 x 2 Pin Pitch 1.25mm horizontal type battery connector
Power ON	1 x 2 x 5 pin, pitch 2.54mm connector for front panel
Audio	1 x 2 x 5 pin, pitch 2.54mm connector for front Audio
Internal I/O Connector	Storage: 4 x SATA III Optional Onboard Infineon SLB9665 support TPM 2.0(co-lay TPM 1.2) COM 2 & 3 : Support RS232/422/485 selected by BIOS selection 2 x 2 x 3 pin, pitch 2.00mm connector for COM 1~3 support RS232 with Pin 9,+5V/+12V/RI by jumper 2 x 2 x 3 pin, pitch 2.00mm connector for COM 2/3 support RS422/485 connector, Pin 5 with +5V 1 x 2 x 5 pin, pitch 2.00mm connector for COM 2 support RS-232 connector COM 3~6 1 x 2 x 20 pin, pitch 2.00mm connector for COM 3~6 support RS-232 connector COM 7~10 1 x 2 x 20 pin, pitch 2.00mm connector for COM 7~10: support RS-232 connector 3 x USB 2.0 by pin header, 1 x USB 2.0 By Vertical type A connector USB Wake up by BIOS Setting 1 x 1 x 4 pin, pitch 2.54mm CPU fan connector with smart fan function supported 1 x 1 x 4 pin, pitch 2.54mm System fan connector with smart fan function supported 1 x 1 x 3 pin, pitch 2.54mm System fan connector 1 x 2 x 5 pin, pitch 2.54mm connector for front panel 1 x 2 x 10 pin, pitch 2.54mm connector for Auxiliary panel 1 x 4 pin, pitch 2.54mm connector for Speaker Buzzer 1 x 2 x 5 pin, pitch 2.54mm connector for front Audio 1 x 4 pin, pitch wafer 2.00mm connector for 2W Speaker 1 x 1 x 4 pin, pitch 2.54mm connector for S/PDIF 1 x 1 x 3pin, pitch 2.54mm connector for COMS Clear 1 x Vertical type battery connector Co-lay 1 x 2 Pin Pitch 1.25mm horizontal type battery connector 1 x 2 x 10 pin, pitch 2.00mm connector for GPIO: 16 bits & +5VS Level SMBus 1 x 5 pin, pitch 2.54mm connector for +3.3S Level SMBus 1 x 2 x 4 pin, pitch 2.00mm connector for BIOS SPI 1 x 2 x 5 pin, pitch 2.0mm connector for LPC Onboard buzzer

	1 x 2 x 13 pin, pitch 2.54mm wafer connector for LPT (Only at Intel® LGA1151 Socket Supports 6th Generation) 1 x 1 x 6 pin, pitch 2.5mm wafer connector for KB / Mouse 1 x 1 x 3 pin pitch 2.00mm connector for AT/ATX jumper 1 x 2 x 12 pin ATX power connector 1 x 2 x 4 pin ATX 12V power connector
Rear I/O Connectors	
USB	4 x USB 3.0
LAN	1 x Intel® I219LM Gigabit Ethernet PHY 1 x Intel® I211AT PCI-e Gigabit Ethernet
Rear Side External I/O Connector	2 x RJ-45 with Dual deck USB3.0 connector 1 x VGA 1 x VGA 1 x DP++ 1 x HDMI COM1 support RS-232 DB9 connector, Pin 9 with / +5V&+12V/RI Supported 1 x Line-out ,1 x Mic-In,1 x Line-in PS/2 KB/MS + USB2.0 connector
Mechanical & Environmental	
Power Requirement	+12V / +5V / 5VSB /+3.3V / -12V
ACPI	Single power ATX Support S0, S3, S4, S5
Power on Type	AT/ATX mode
Operating Temp.	0~60°C (32~140°F)
Storage Temp.	-40~ 75°C
Operating Humidity	0%~90% relative humidity, non-condensing
Size (L x W) (Please consult product engineers for the production feasibility if the size is larger than 410x360mm or smaller than 80x70mm)	12" x 9.6" (304.8mm x 243.84mm)
Weight	0.60 kg
OS Support (listed in accordance with Intel document)	BIOS Support: Win7 64bit CSM mode (Only at Intel® LGA1151 Socket Supports 6th Generation) Win10 64bit UEFI Intel® LGA1151 Socket Supports 6th Generation CPU

	Intel® LGA1151 Socket Supports 7th Generation CPU

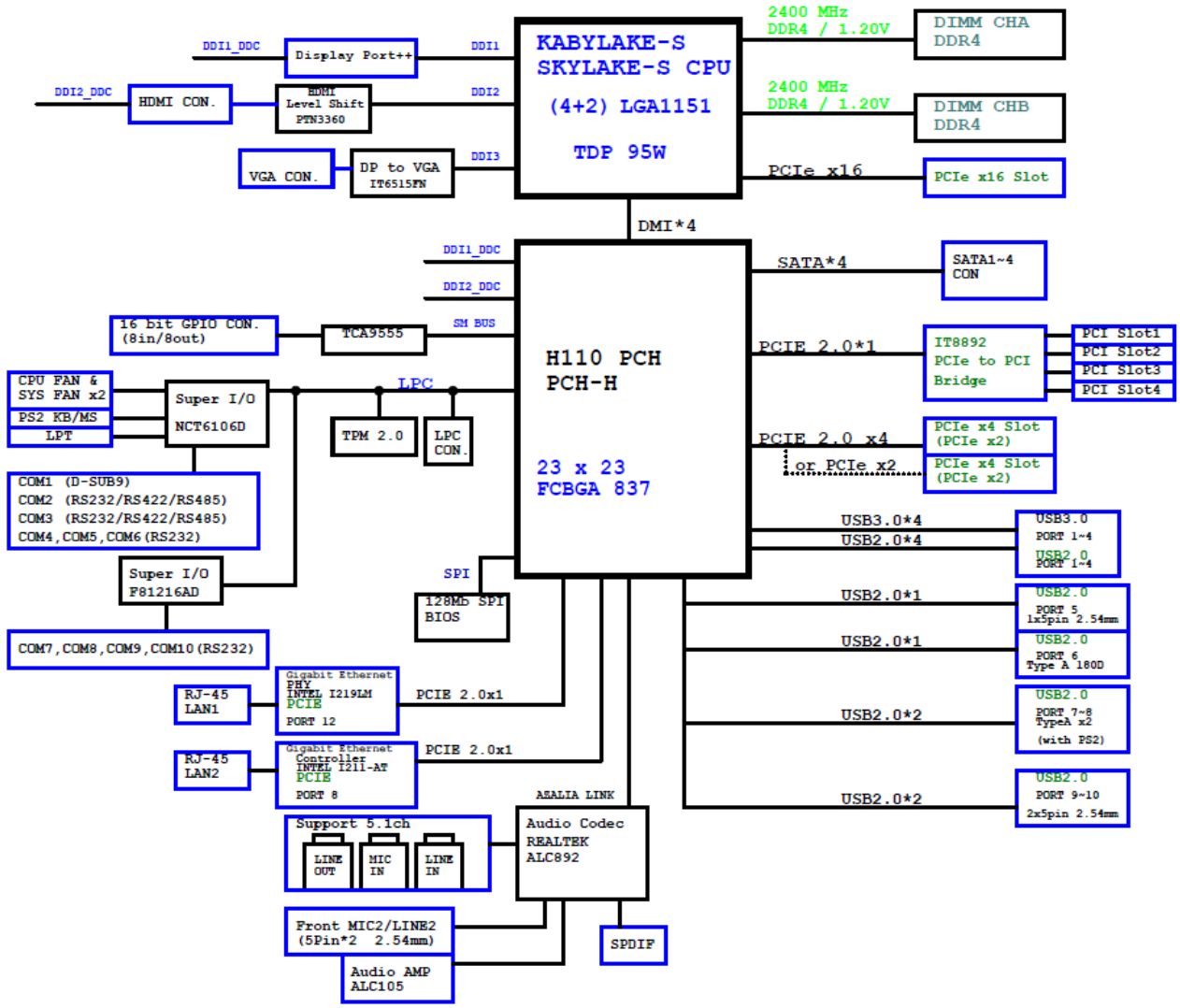
Note:

- Specifications are subject to change without notice.
- **2 x PCI-e x4 slot for 1 x PCI-e x4 or 2 x PCI-e x2**

  If BIOS setting is configured as TWO PCIe x2, BIOS must reset the mainboard during the first boot after AC power off.

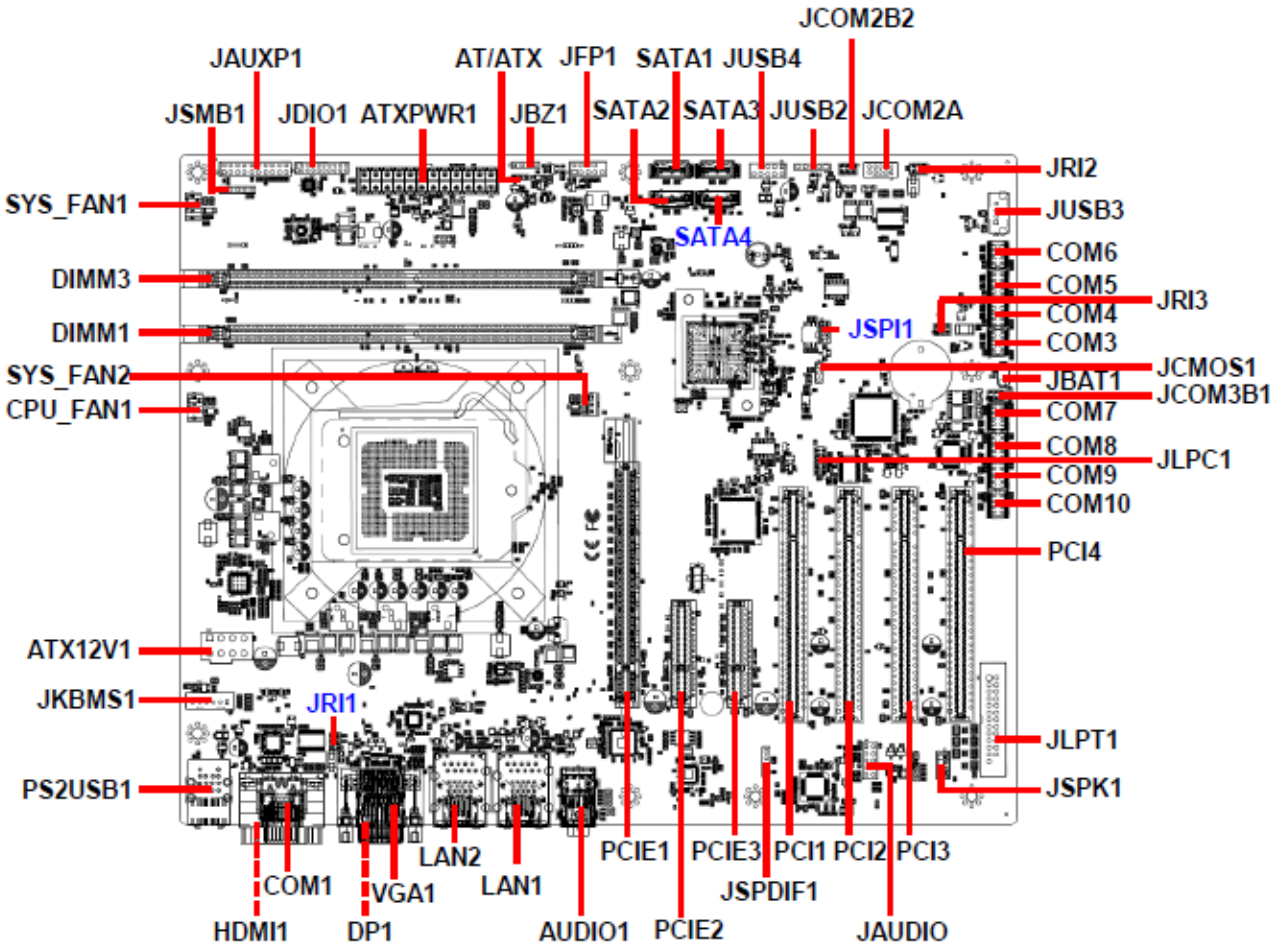
1.6 Architecture Overview—Block Diagram

The following block diagram shows the architecture and main components of EAX-H110KP.



2. Hardware Configuration

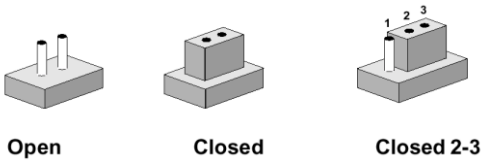
2.1 Product Overview



2.2 Jumper and Connector List

You can configure your board to match the needs of your application by setting jumpers. A jumper is the simplest kind of electric switch.

It consists of two metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To "close" a jumper you connect the pins with the clip. To "open" a jumper you remove the clip. Sometimes a jumper will have three pins, labeled 1, 2, and 3. In this case, you would connect either two pins.



The jumper settings are schematically depicted in this manual as follows:



A pair of needle-nose pliers may be helpful when working with jumpers.

Connectors on the board are linked to external devices such as hard disk drives, a keyboard, or floppy drives. In addition, the board has a number of jumpers that allow you to configure your system to suit your application.

If you have any doubts about the best hardware configuration for your application, contact your local distributor or sales representative before you make any changes.

The following tables list the function of each of the board's jumpers and connectors.

Jumpers

Label	Function	Note
JRI1/2	Serial port 1/2 pin9 signal select	3 x 2 header, pitch 2.00mm
JATATX1	AT/ATX Power Mode Select	3 x 1 header, pitch 2.00mm
JCMOS1	Clear CMOS	3 x 1 header, pitch 2.54mm

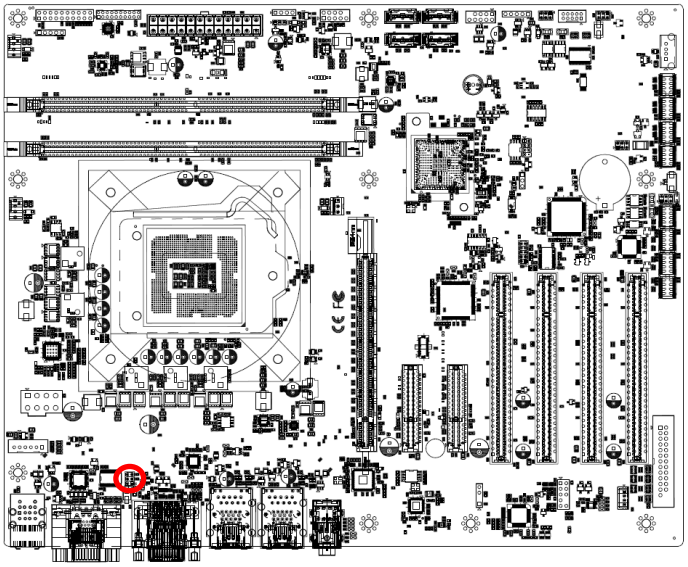
Connectors

Label	Function	Note
CPUFAN1	CPU fan connector	4 x 1 wafer, pitch 2.54mm
SYSFAN1	System fan connector 1 (with smart fan function supported)	4 x 1 wafer, pitch 2.54mm
SYSFAN2	System fan connector 2	3 x 1 wafer, pitch 2.54mm
JFP1	Miscellaneous setting connector	5 x 2 header, pitch 2.54 mm
DIMM1/3	288-pin DDR4 DIMM socket	

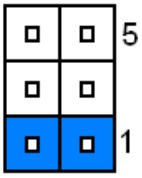
JAUDIO1	Audio connector 2	5 x 2 header, pitch 2.54 mm
JAUXP1	Auxiliary Panel connector	10 x 2 header, pitch 2.54 mm
JSPI1	SPI connector	4 x 2 header, pitch 2.00mm
JCOM2A	Serial Port 2 connector	5 x 2 wafer, pitch 2.00mm
JCOM2B	COM2 RS485/422 connector	3 x 2 header, pitch 2.00 mm
JCOM3B	COM2 RS485/422 connector	3 x 2 header, pitch 2.00 mm
JCOM3/4/5/6	Serial Port 3/4/5/6 connector	20 x 2 header, pitch 2.00 mm
JCOM7/8/9/10	Serial Port 7/8/9/10 connector	20 x 2 header, pitch 2.00 mm
JBZ1	External Speaker connector	4 x 1 header, pitch 2.54 mm
JDIO1	General purpose I/O connector	10 x 2 header, pitch 2.00 mm
JSPK1	Speaker connector	1 x 4 wafer, pitch 2.00 mm
JKBMS1	PS/2 keyboard & mouse connector	6 x 1 wafer, pitch 2.50 mm
LAN1/2	2 x RJ-45 with Dual deck USB 3.0 connector	
JUSB2	USB connector 2	5 x 1 header, pitch 2.54mm
JUSB3	USB connector 3	
JUSB4	USB connector 4	5 x 2 header, pitch 2.54mm
JLPC1	LPC connector	5 x 2 header, pitch 2.00mm
PCIE1/2/3	PCIe slot 1/2/3	
PCI1/2/3/4	PCI slot 1/2/3/4	
JBAT1	Battery connector	2 x 1 wafer, pitch 1.25mm
ATXPWR1	ATX Power connector	12 x 2 wafer, pitch 4.20mm
ATX12V1	Power connector	2 x 4 wafer, pitch 4.20mm
SATA1~4	Serial ATA connector 1~4	
HDMI1	HDMI connector	
DP1	DP connector	
VGA1	VGA connector	
JSPDIF1	S/PDIF connector	1 x 4 header, pitch 2.54mm
JSMB1	SMBus connector	5 x 1 header, pitch 2.54mm

2.3 Setting Jumpers & Connectors

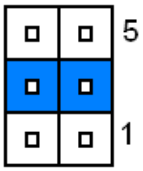
2.3.1 Serial port 1 pin9 signal select (JRI1)



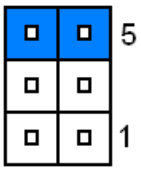
Ring*



+5V

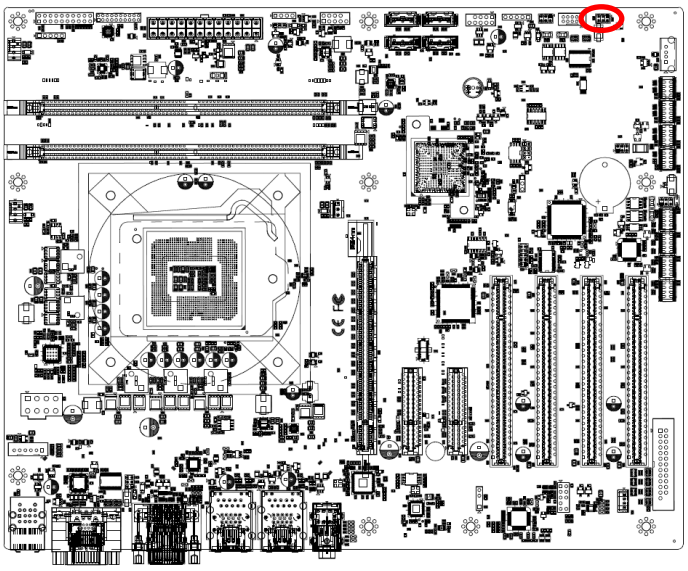


+12V

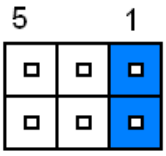


*** Default**

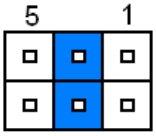
2.3.2 Serial port 2 pin9 signal select (JRI2)



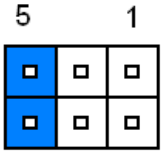
Ring*



+5V

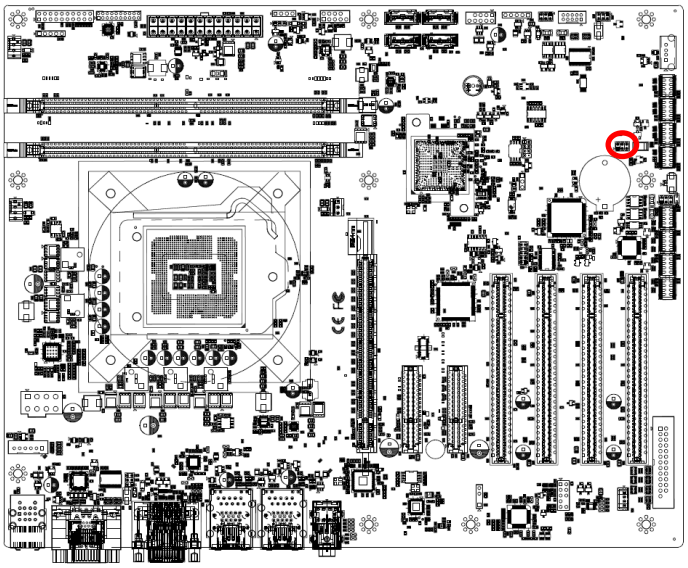


+12V

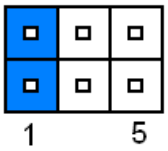


*** Default**

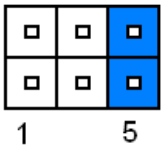
2.3.3 Serial port 3 pin9 signal select (JRI3)



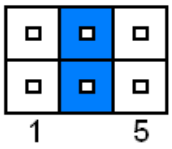
Ring*



+12V

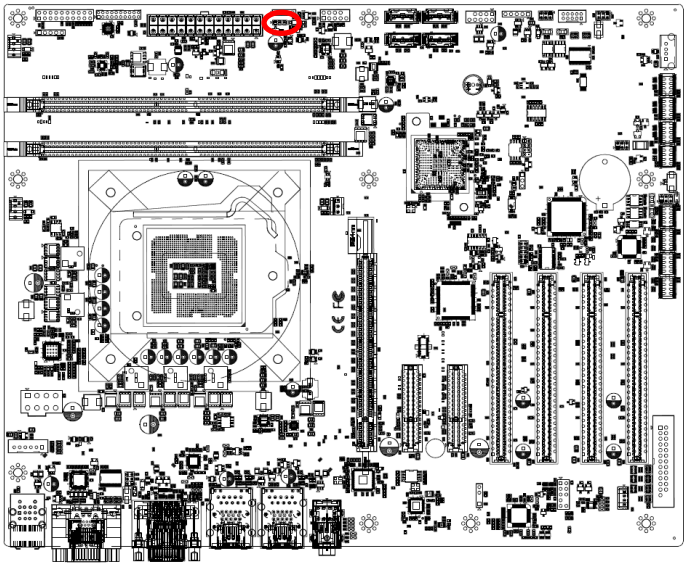


+5V

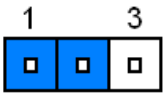


*** Default**

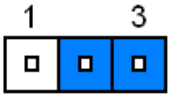
2.3.4 AT/ATX Power Mode Select (JATATX1)



AT*

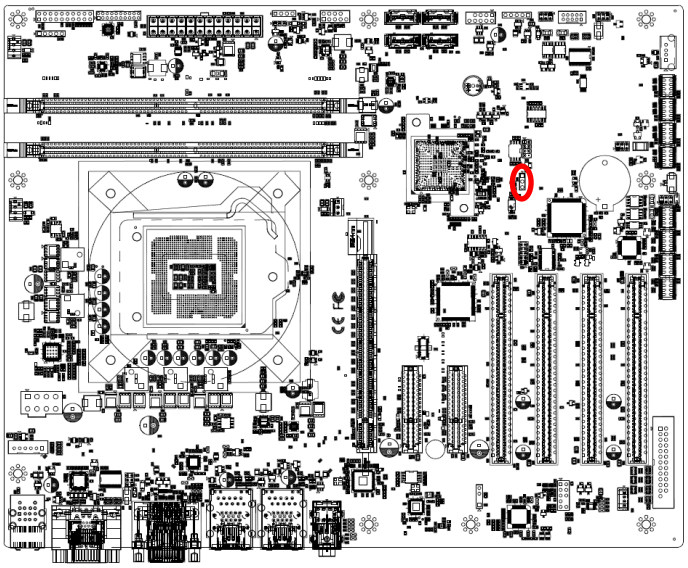


ATX

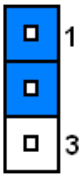


*** Default**

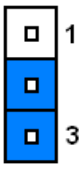
2.3.5 Clear CMOS (JCMOS1)



Protect*

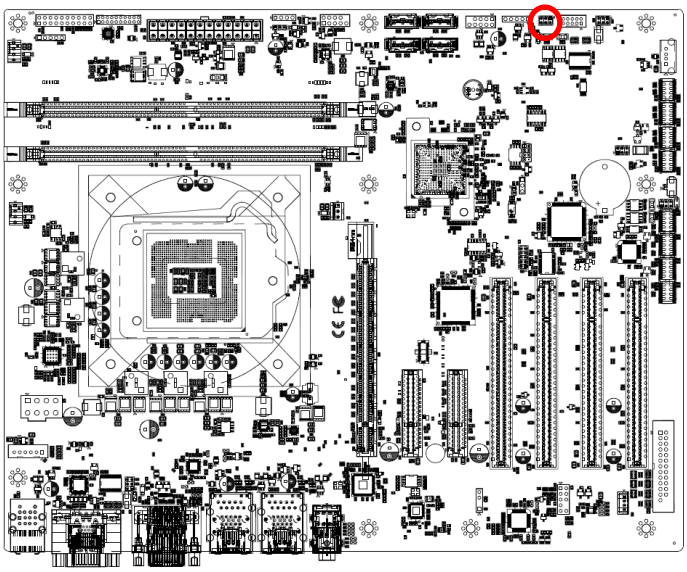


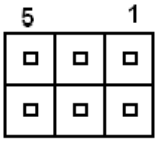
Clear CMOS



*** Default**

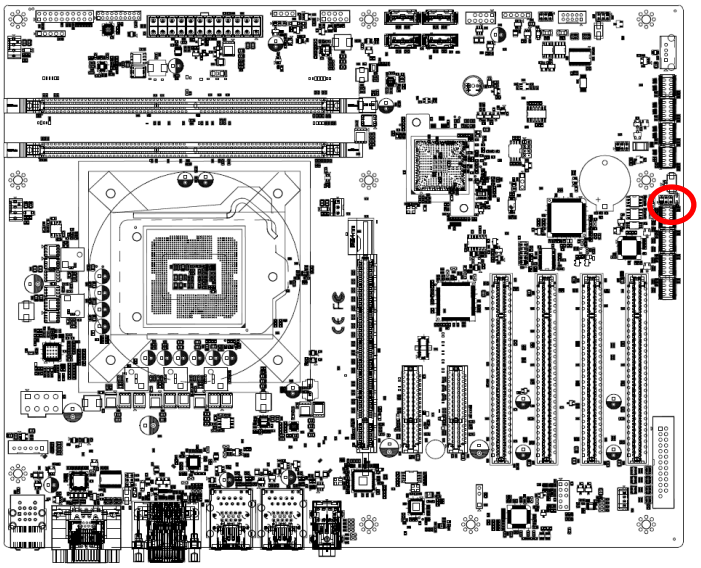
2.3.6 COM2 RS485/422 connector (JCOM2B)

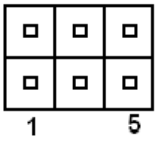




Signal	PIN	PIN	Signal
485TX-	1	2	422RX-
485TX+	3	4	422RX+
+5V	5	6	GND

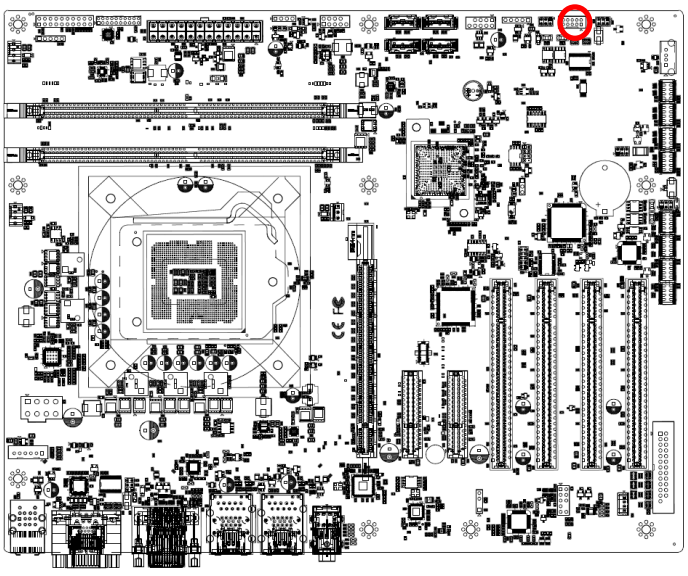
2.3.7 COM2 RS485/422 connector (JCOM3B)

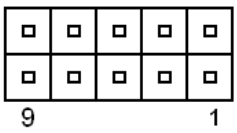




Signal	PIN	PIN	Signal
485TX-_C	1	2	422RX-_C
485TX+_C	3	4	422RX+_C
+5V	5	6	GND

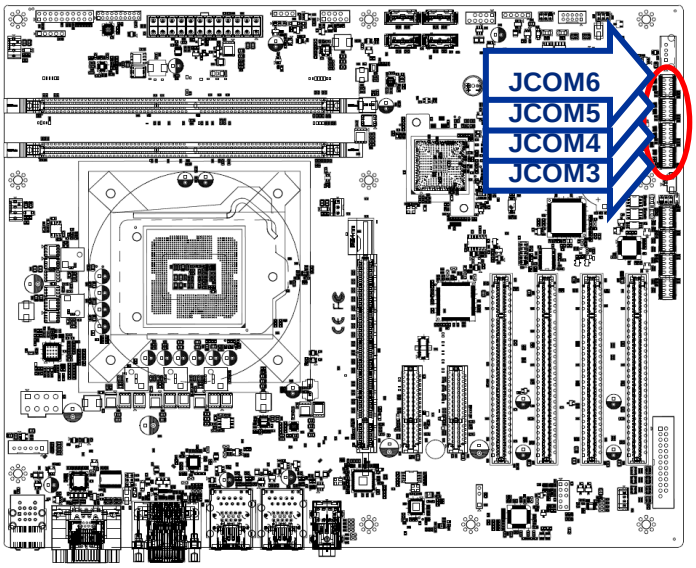
2.3.8 Serial Port2 connector (JCOM2A)

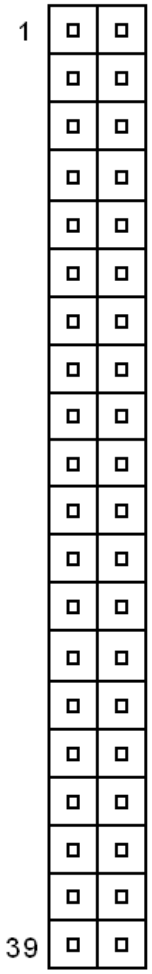




Signal	PIN	PIN	Signal
NRXDB	2	1	NDCDB#
NDTRB#	4	3	NTXDB
NDSRB#	6	5	GND
NCTSB#	8	7	NRTSB#
NC	10	9	JNRIB#

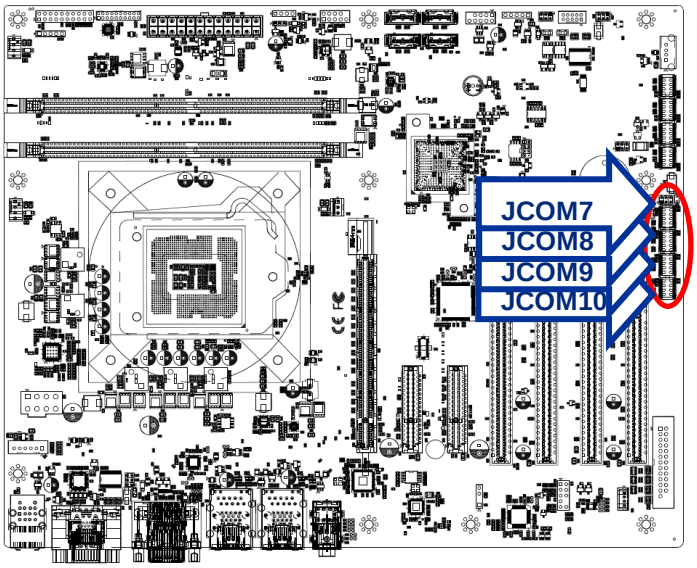
2.3.9 Serial port 3/4/5/6 connector (JCOM3-6)

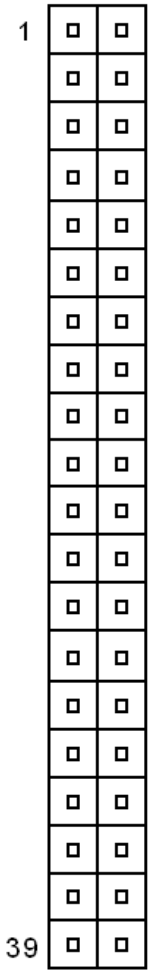




Signal	PIN	PIN	Signal
NDCDC#	1	2	NRXDC
NTXDC	3	4	NDTRC#
GND	5	6	NDSRC#
NRTSC#	7	8	NCTSC#
JNRIC#	9	10	NC
NDCDD#	11	12	NRXDD
NTXDD	13	14	NDTRD#
GND	15	16	NDSRD#
NRTSD#	17	18	NCTSD#
NRID#	19	20	NC
NDCDE#	21	22	NRXDE
NTXDE	23	24	NDTRE#
GND	25	26	NDSRE#
NRTSE#	27	28	NCTSE#
NRIE#	29	30	NC
NDCDF#	31	32	NRXDF
NTXDF	33	34	NDTRF#
GND	35	36	NDSRF#
NRTSF#	37	38	NCTSF#
NRIF#	39	40	NC

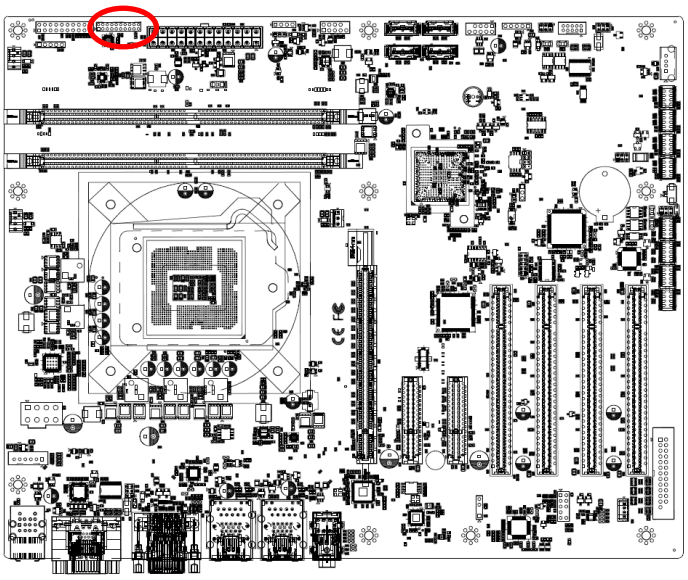
2.3.10 Serial port 3/4/5/6 connector (JCOM7-10)

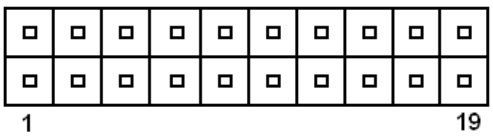




Signal	PIN	PIN	Signal
COM_DCD#_7	1	2	COM_RXD_7
COM_TXD_7	3	4	COM_DTR#_7
GND	5	6	COM_DSR#_7
COM_RTS#_7	7	8	COM_CTS#_7
COM_RI#_7	9	10	NC
COM_DCD#_8	11	12	COM_RXD_8
COM_TXD_8	13	14	COM_DTR#_8
GND	15	16	COM_DSR#_8
COM_RTS#_8	17	18	COM_CTS#_8
COM_RI#_8	19	20	NC
COM_DCD#_9	21	22	COM_RXD_9
COM_TXD_9	23	24	COM_DTR#_9
GND	25	26	COM_DSR#_9
COM_RTS#_9	27	28	COM_CTS#_9
COM_RI#_9	29	30	NC
COM_DCD#_10	31	32	COM_RXD_10
COM_TXD_10	33	34	COM_DTR#_10
GND	35	36	COM_DSR#_10
COM_RTS#_10	37	38	COM_CTS#_10
COM_RI#_10	39	40	NC

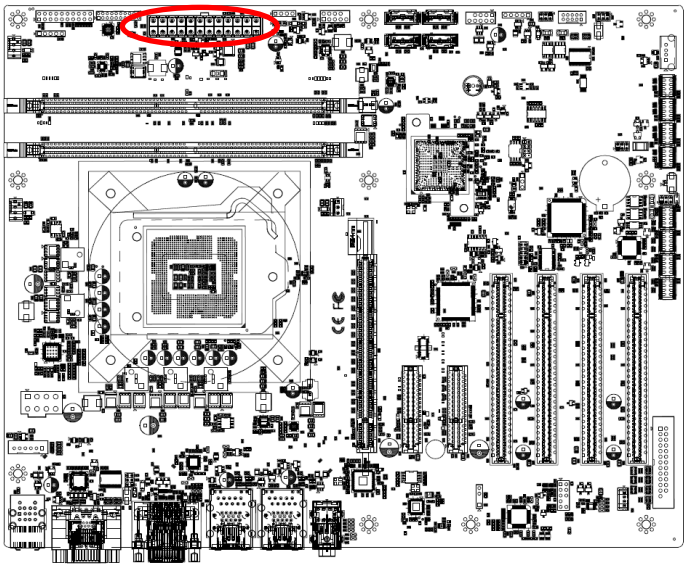
2.3.11 General purpose I/O connector (JDIO1)

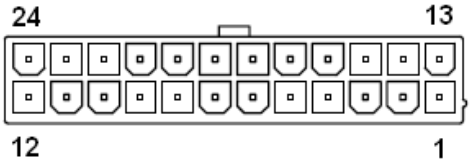




Signal	PIN	PIN	Signal
DI0	1	2	DO0
DI1	3	4	DO1
DI2	5	6	DO2
DI3	7	8	DO3
DI4	9	10	DO4
DI5	11	12	DO5
DI6	13	14	DO6
DI7	15	16	DO7
SMB_CLK_9555	17	18	SMB_DATA_9555
GND	19	20	+5V

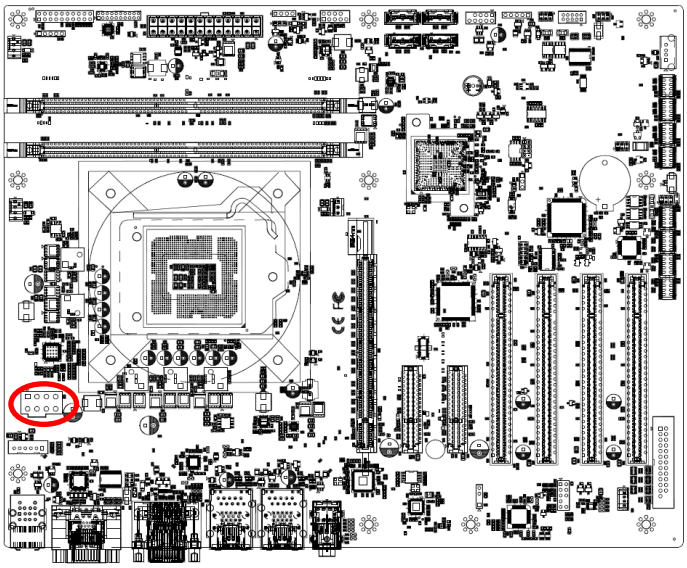
2.3.12 ATX Power connector (ATXPWR1)

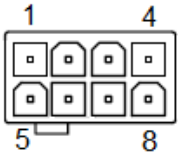




Signal	PIN	PIN	Signal
+3.3V	13	1	+3.3V
-12V	14	2	+3.3V
GND	15	3	GND
PSON#	16	4	+5V
GND	17	5	GND
GND	18	6	+5V
GND	19	7	GND
NC	20	8	ATX_PWRGD
+5V	21	9	+5VSB
+5V	22	10	+12V
+5V	23	11	+12V
GND	24	12	+3.3V

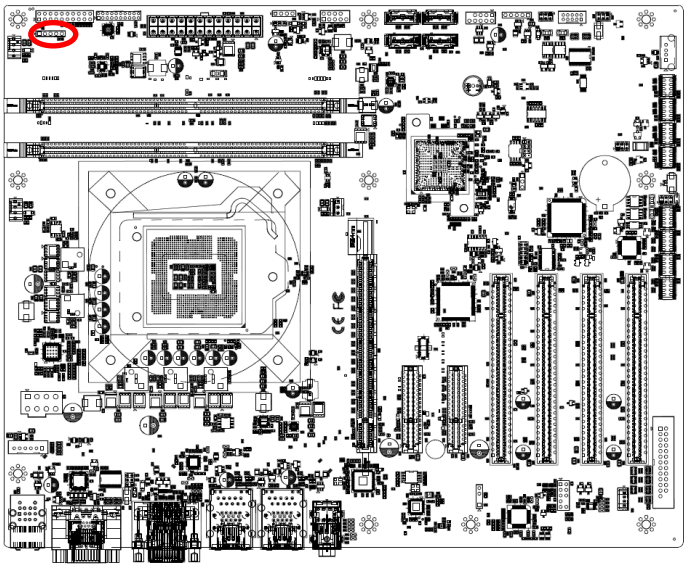
2.3.13 Power connector (ATX12V1)

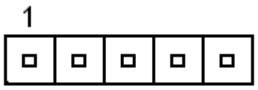




Signal	PIN	PIN	Signal
+12V	5	1	GND
+12V	6	2	GND
+12V	7	3	GND
+12V	8	4	GND

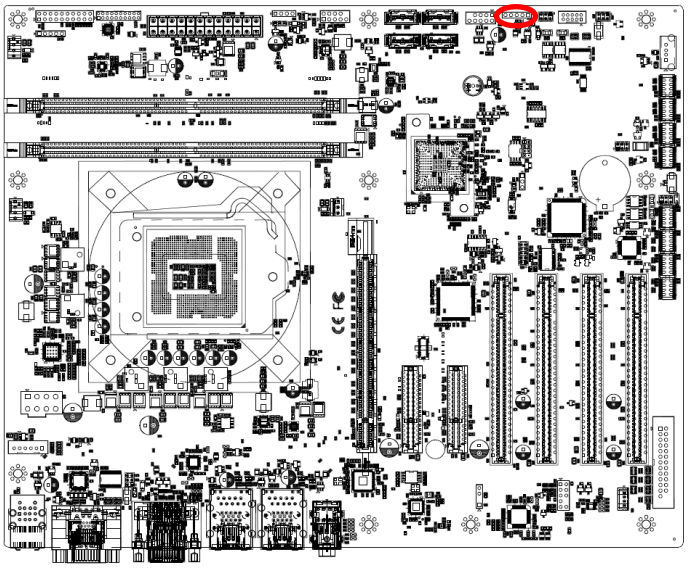
2.3.14 SMBus connector (JSMB1)





Signal	PIN
SMB_CLK_MAIN	1
SMB_DATA_MAIN	2
SMB_ALERT#_MAIN	3
GND	4
+3.3V	5

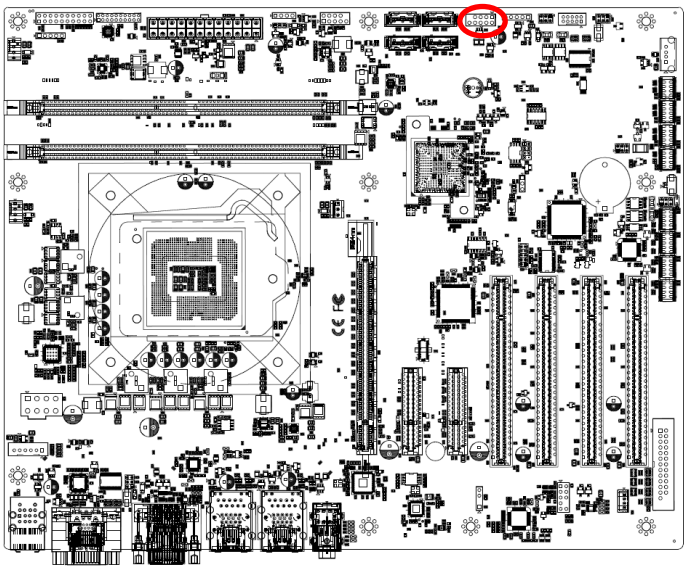
2.3.15 USB connector 2 (JUSB2)

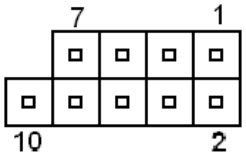




Signal	PIN
USBVCC5	1
USB_R_DN5	2
USB_R_DP5	3
GND	4
GND	5

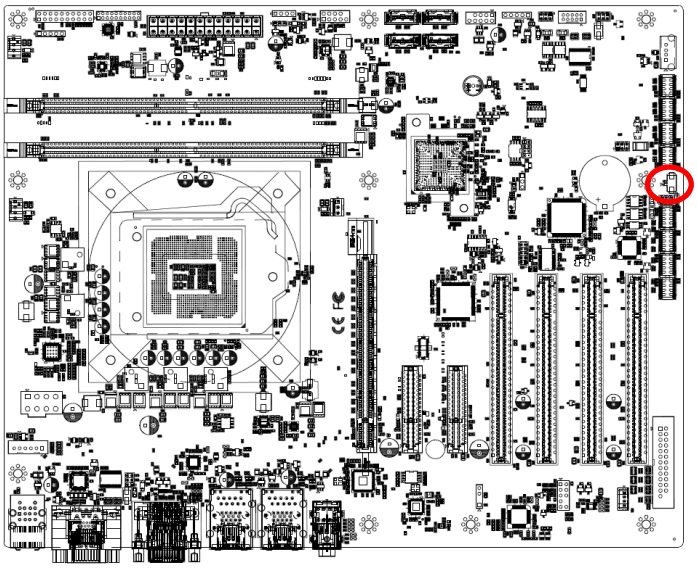
2.3.16 USB connector 4 (JUSB4)





Signal	PIN	PIN	Signal
USBVCC_9A	2	1	USBVCC_9A
USB_R_DN10	4	3	USB_R_DN9
USB_R_DP10	6	5	USB_R_DP9
GND	8	7	GND
NC	10		

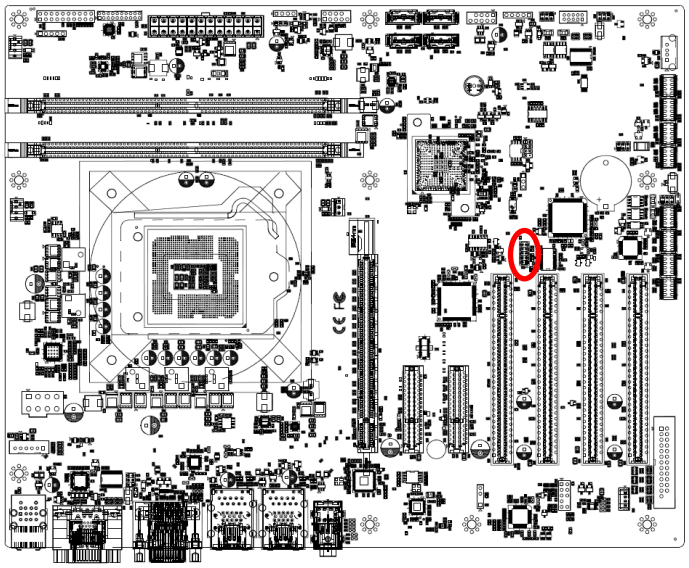
2.3.17 Battery connector (JBAT1)

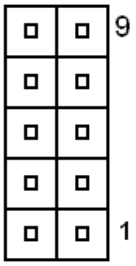




Signal	PIN
+3.3V	1
GND	2

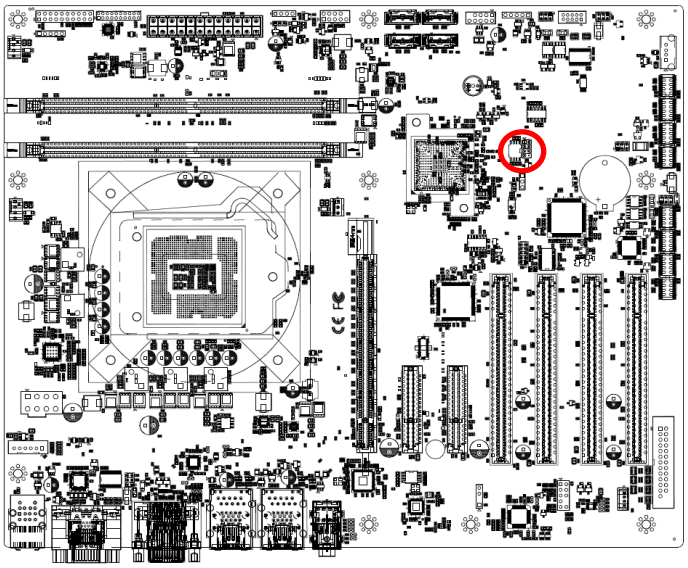
2.3.18 LPC connector (JLPC1)

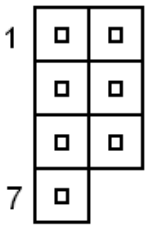




Signal	PIN	PIN	Signal
LPC_AD0_R	1	2	+3.3V
LPC_AD1_R	3	4	BUF_PLT_RST#
LPC_AD2_R	5	6	LPC_FRAME#_R
LPC_AD3_R	7	8	LPC_CLK
LPC_SERIRQ_R	9	10	GND

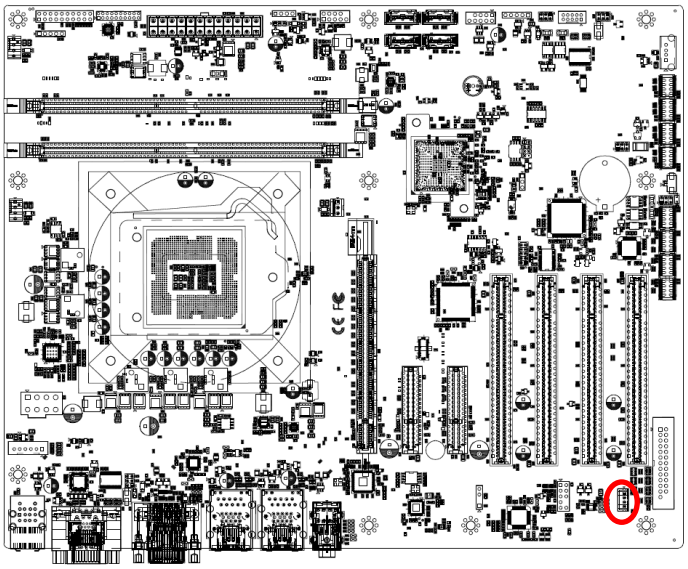
2.3.19 SPI connector (JSPI1)





Signal	PIN	PIN	Signal
+3.3V	1	2	GND
SSPI_CS0#_R	3	4	SSPI_SCLK_R
SSPI_SO_R	5	6	SSPI_SI_R
SSPI_HOLD#0	7		

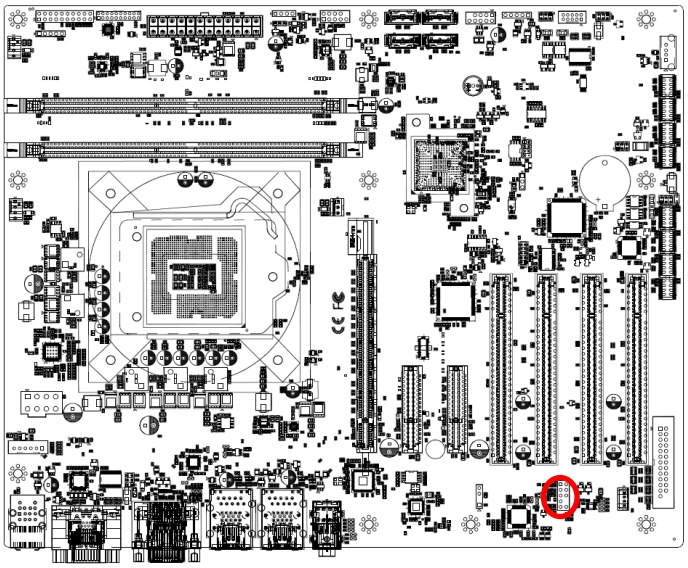
2.3.20 Speaker connector (JSPK1)

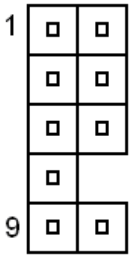




Signal	PIN
LSPK+	1
LSPK-	2
RSPK+	3
RSPK -	4

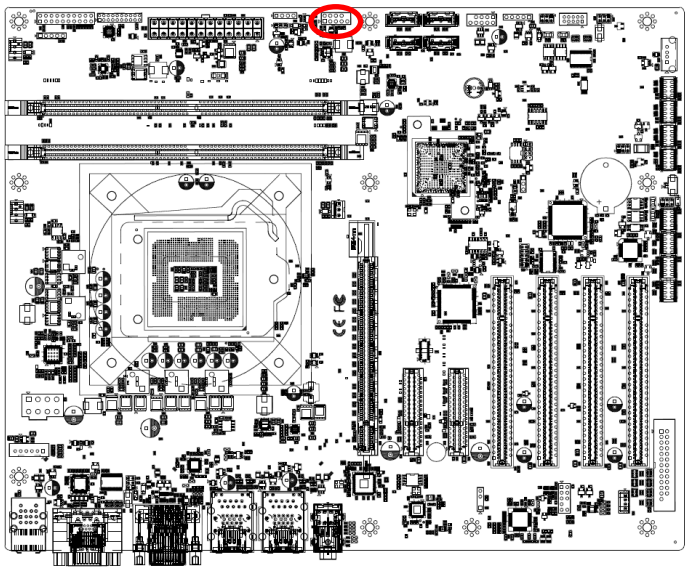
2.3.21 Audio connector (JAUDIO)

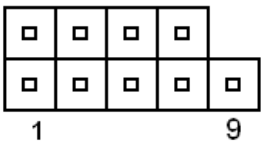




Signal	PIN	PIN	Signal
MIC2_L	1	2	GND
MIC2_R	3	4	ACZ_DET#_R
LINE2_RIN	5	6	MIC2_JD
GND	7		
LINE2_LIN	9	10	LINE_JD

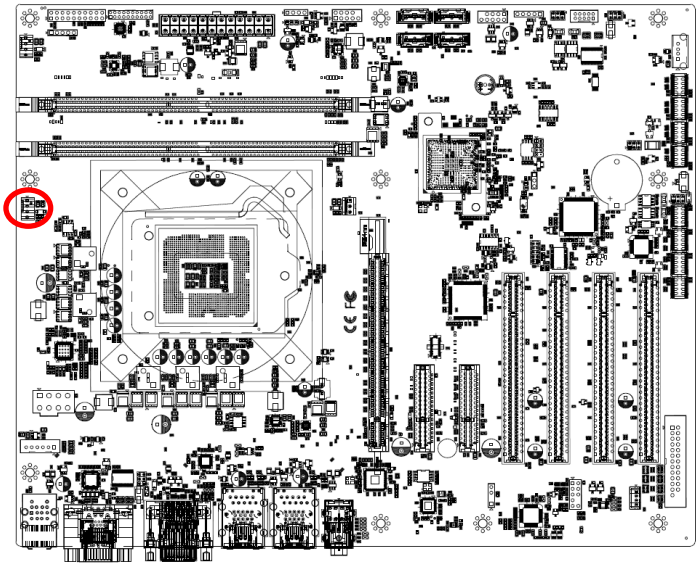
2.3.22 Miscellaneous setting connector (JFP1)

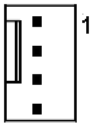




Signal	PIN	PIN	Signal
HDD_LED+	1	2	PWR_LED+
HDD_LED-	3	4	PWE_LED-
RSET_BTN#	5	6	PWRBTN#
GND	7	8	GND
NC	9		

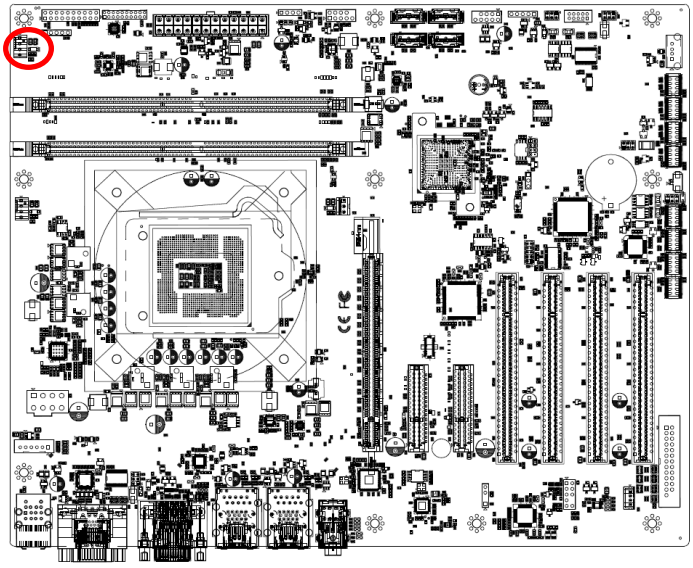
2.3.23 CPU fan connector (CPUFAN1)

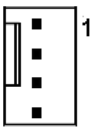




Signal	PIN
CPUFANOUT	4
CPUFANIN	3
+12V	2
GND	1

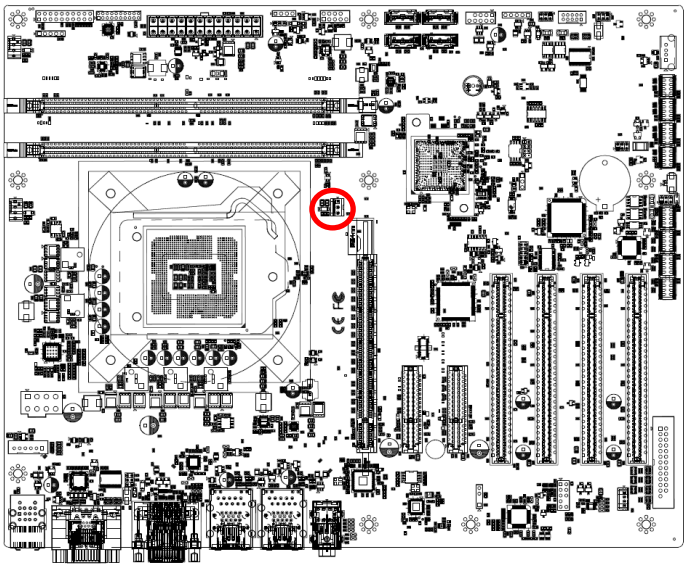
2.3.24 System fan connector 1 (SYSFAN1)

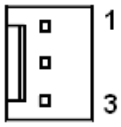




Signal	PIN
SYSFANOUT1	4
SYSFANIN1	3
+12V	2
GND	1

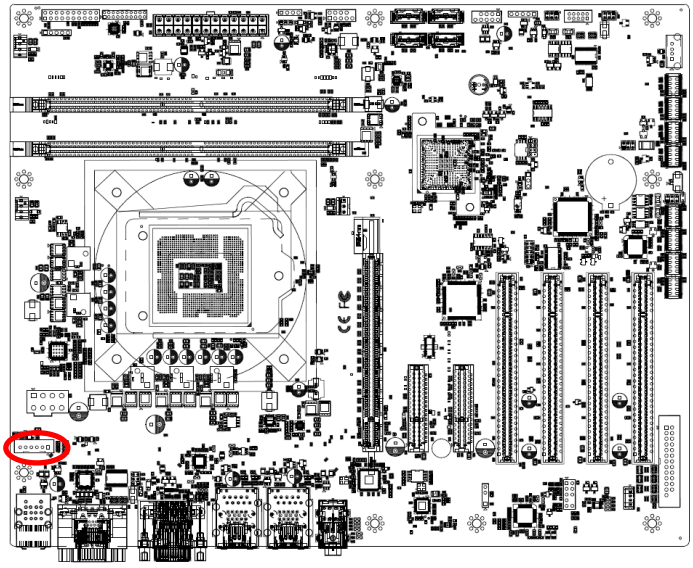
2.3.25 System fan connector 2 (SYSFAN2)

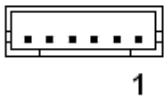




Signal	PIN
SYS_FAN_IN_2	3
+12V	2
GND	1

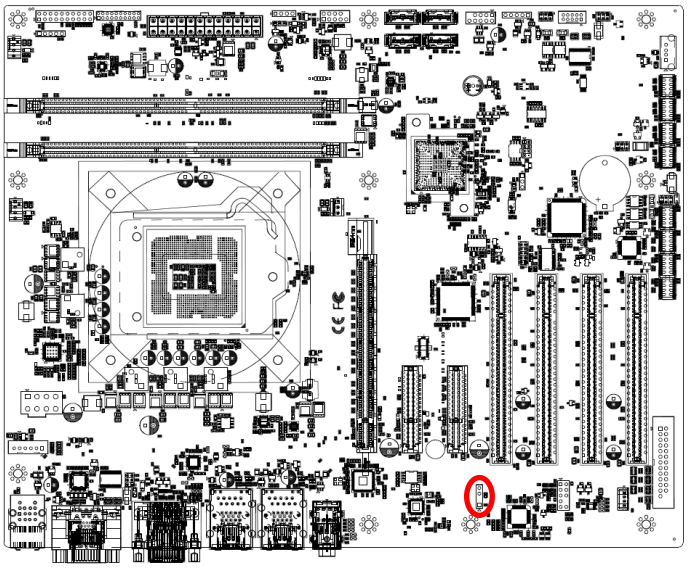
2.3.26 PS/2 keyboard & mouse connector (JKBMS1)

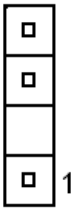




Signal	PIN
KBCK	1
KBDT	2
MSDT	3
GND	4
+5V_KBMS	5
MSCK	6

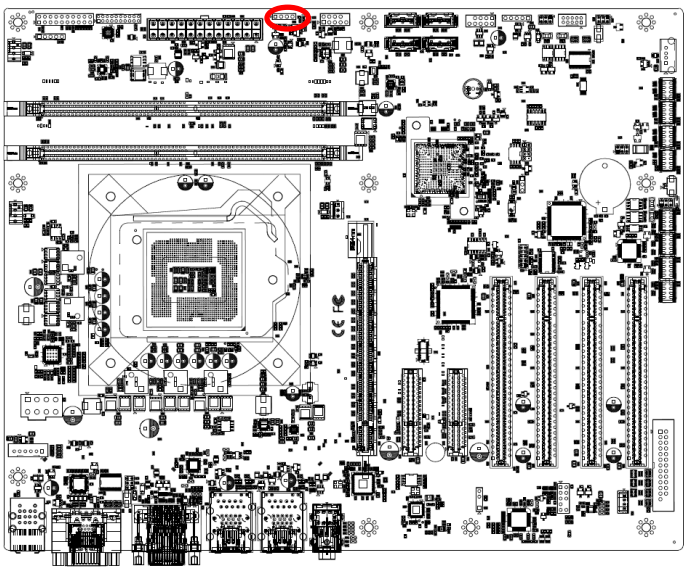
2.3.27 S/PDIF connector (JSPDIF1)

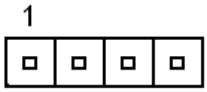




Signal	PIN
+5V	1
SPDIF_O	3
GND	4

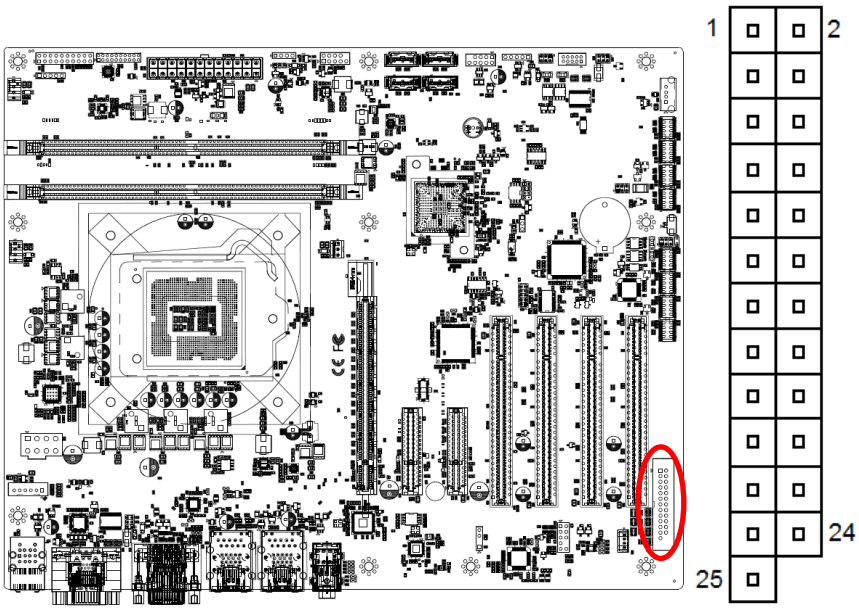
2.3.28 External Speaker connector (JBZ1)





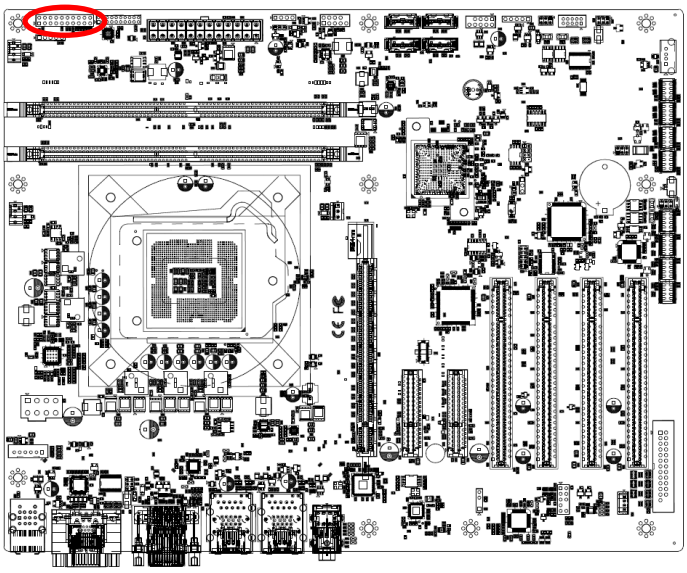
Signal	PIN
+5V	1
NC	2
NC	3
HDA_SPKR	4

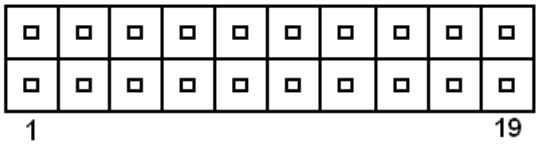
2.3.29 LPT connector (JLPT1)



Signal	PIN	PIN	Signal
PT-STB-	1	2	PT_AFD#
PTD0	3	4	ERR#
PTD1	5	6	PT_PAR_INIT#
PTD2	7	8	PT_SLIN#
PTD3	9	10	GND
PTD4	11	12	GND
PTD5	13	14	GND
PTD6	15	16	GND
PTD7	17	18	GND
ACK#	19	20	GND
BUSY	21	22	GND
PE	23	24	GND
SLCT	25		

2.3.30 Auxiliary Panel connector (JAUXP1)





Signal	PIN	PIN	Signal
+5V	1	2	NC
NC	3	4	SMB_CLK_MAIN
CASEOPEN#	5	6	NC
GND	7	8	GND
ERROR_LED	9	10	SMB_DATA_MAIN
ERROR_LED#	11	12	+5V
FRONT_LAN1_ACT	13	14	FRONT_LAN1_LINK100#
GND	15	16	FRONT_LAN1_LINK1000#
FRONT_LAN2_ACT	17	18	FRONT_LAN2_LINK100#
GND	19	20	FRONT_LAN2_LINK1000#

3.BIOS Setup

3.1 Introduction

The BIOS setup program allows users to modify the basic system configuration. In this following chapter will describe how to access the BIOS setup program and the configuration options that may be changed.

3.2 Starting Setup

The AMI BIOS™ is immediately activated when you first power on the computer. The BIOS reads the system information contained in the NVRAM and begins the process of checking out the system and configuring it. When it finishes, the BIOS will seek an operating system on one of the disks and then launch and turn control over to the operating system.

While the BIOS is in control, the Setup program can be activated in one of two ways:
By pressing <Del> or <F2> immediately after switching the system on, or
By pressing the <Del> or <F2> key when the following message appears briefly at the left-top of the screen during the POST (Power On Self Test).

Press <Del> or <F2> to enter SETUP

If the message disappears before you respond and you still wish to enter Setup, restart the system to try again by turning it OFF then ON or pressing the "RESET" button on the system case. You may also restart by simultaneously pressing <Ctrl>, <Alt>, and <Delete> keys. If you do not press the keys at the correct time and the system does not boot, an error message will be displayed and you will again be asked to.

Press F1 to Continue, DEL to enter SETUP

3.3 Using Setup

In general, you use the arrow keys to highlight items, press <Enter> to select, use the PageUp and PageDown keys to change entries, press <F1> for help and press <Esc> to quit. The following table provides more detail about how to navigate in the Setup program using the keyboard.

Button	Description
↑	Move to previous item
↓	Move to next item
←	Move to the item in the left hand
→	Move to the item in the right hand
Esc key	Main Menu -- Quit and not save changes into NVRAM Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu
+ key	Increase the numeric value or make changes
- key	Decrease the numeric value or make changes
F1 key	General help, only for Status Page Setup Menu and Option Page Setup Menu
F2 key	Previous Values.
F3 key	Optimized defaults
F4 key	Save & Exit Setup

- **Navigating Through The Menu Bar**

  Use the left and right arrow keys to choose the menu you want to be in.



Note: Some of the navigation keys differ from one screen to another.

- **To Display a Sub Menu**

  Use the arrow keys to move the cursor to the sub menu you want. Then press <Enter>. A "➢" pointer marks all sub menus.

3.4 Getting Help

Press F1 to pop up a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window press <Esc> or the F1 key again.

3.5 In Case of Problems

If, after making and saving system changes with Setup, you discover that your computer no longer is able to boot, the AMI BIOS supports an override to the NVRAM settings which resets your system to its defaults.

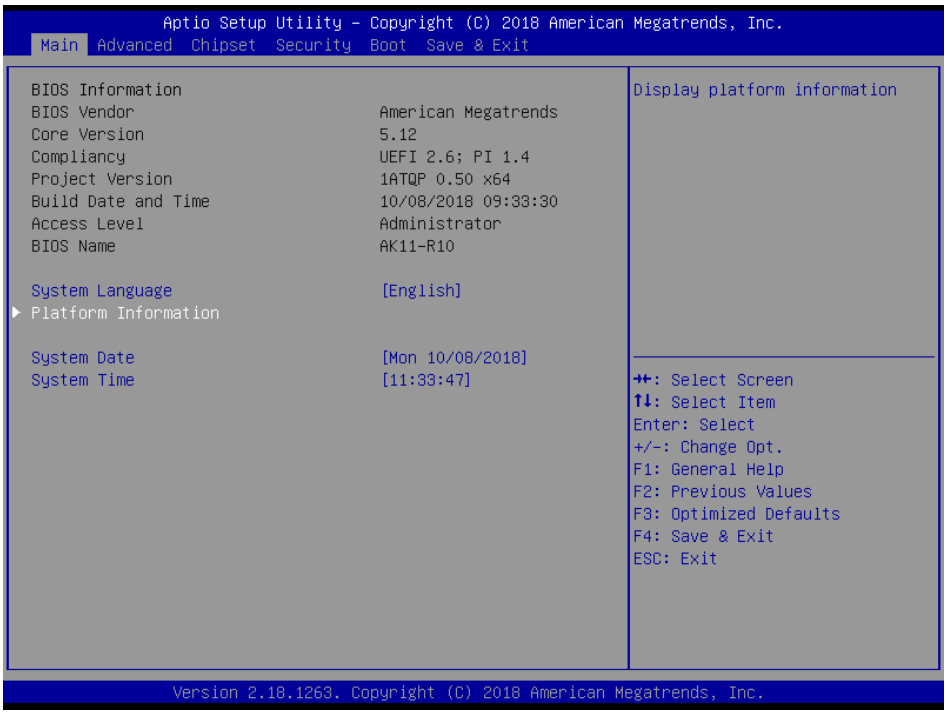
The best advice is to only alter settings which you thoroughly understand. To this end, we strongly recommend that you avoid making any changes to the chipset defaults. These defaults have been carefully chosen by both BIOS Vendor and your systems manufacturer to provide the absolute maximum performance and reliability. Even a seemingly small change to the chipset setup has the potential for causing you to use the override.

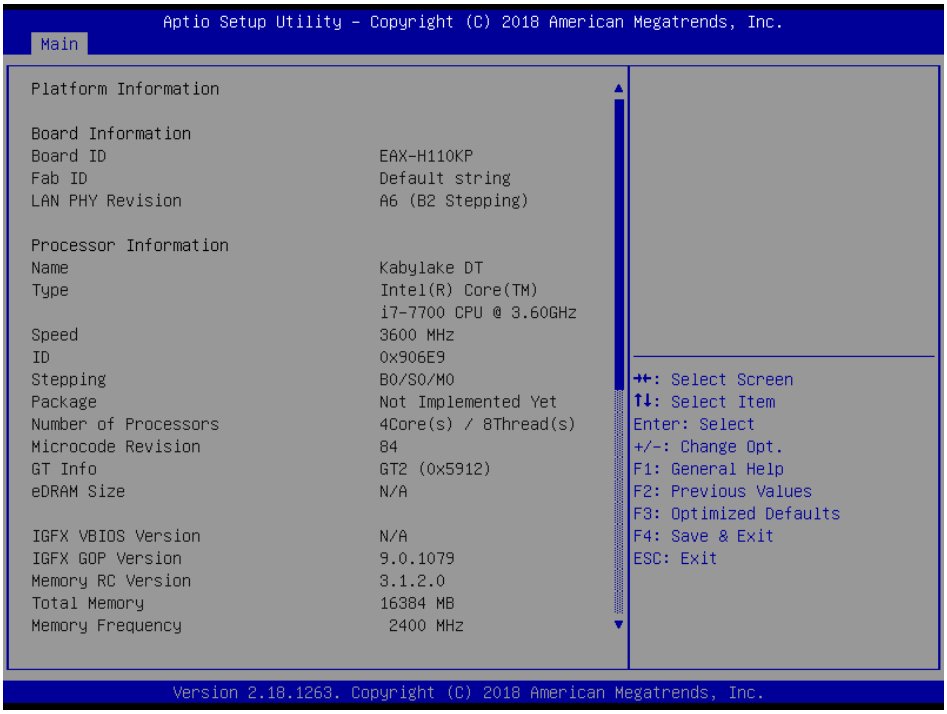
3.6 BIOS setup

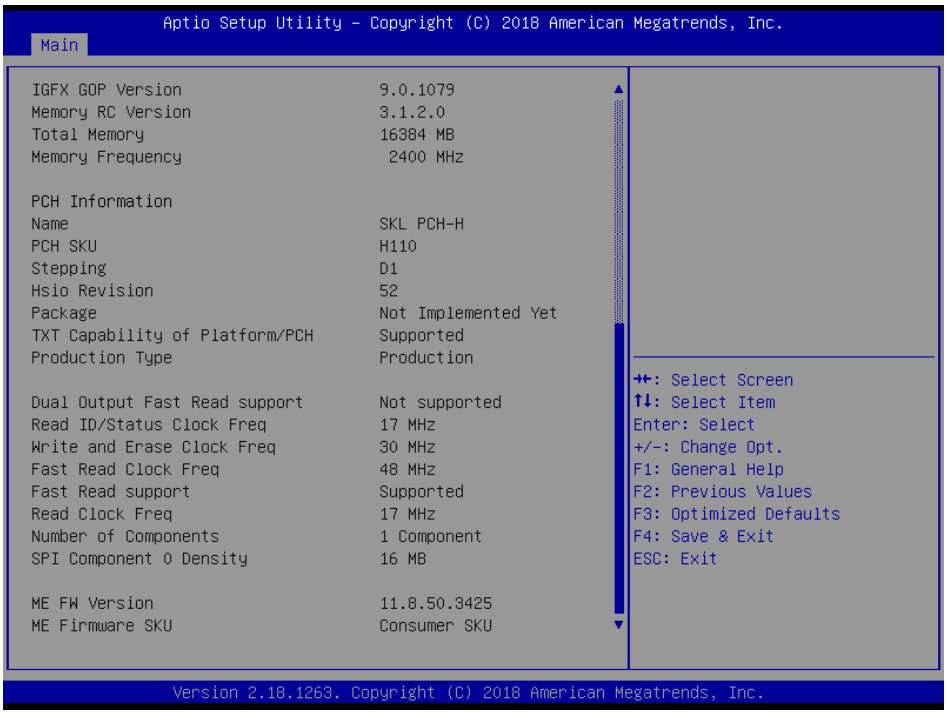
Once you enter the Aptio Setup Utility, the Main Menu will appear on the screen. The Main Menu allows you to select from several setup functions and exit choices. Use the arrow keys to select among the items and press <Enter> to accept and enter the sub-menu.

3.6.1 Main Menu

This section allows you to record some basic hardware configurations in your computer and set the system clock.







3.6.1.1 System Language

This option allows choosing the system default language.

3.6.1.2 System Date

Use the system date option to set the system date. Manually enter the day, month and year.

3.6.1.3 System Time

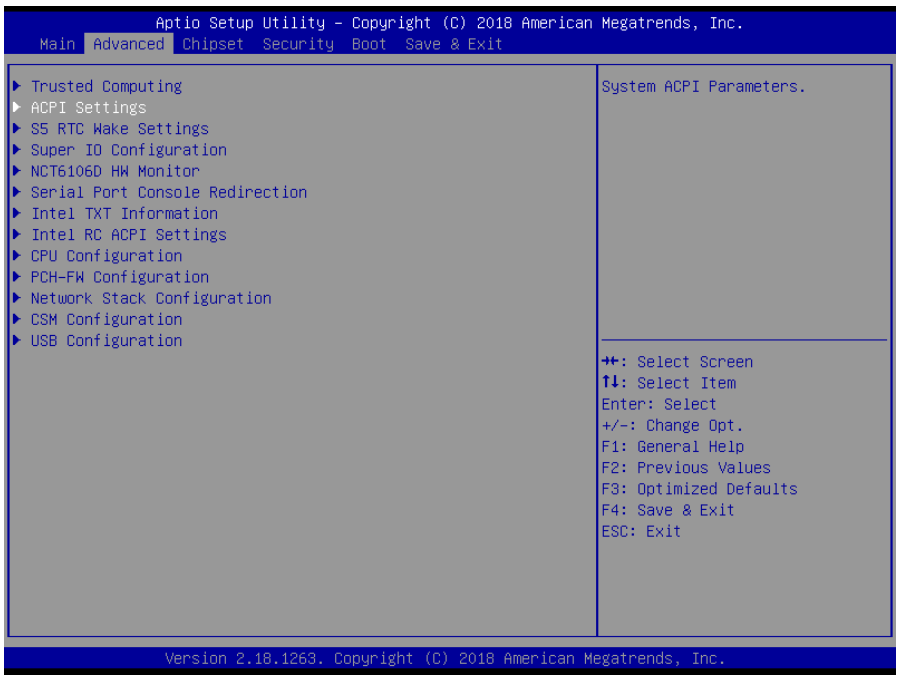
Use the system time option to set the system time. Manually enter the hours, minutes and seconds.

Note: The BIOS setup screens shown in this chapter are for reference purposes only, and may not exactly match what you see on your screen.

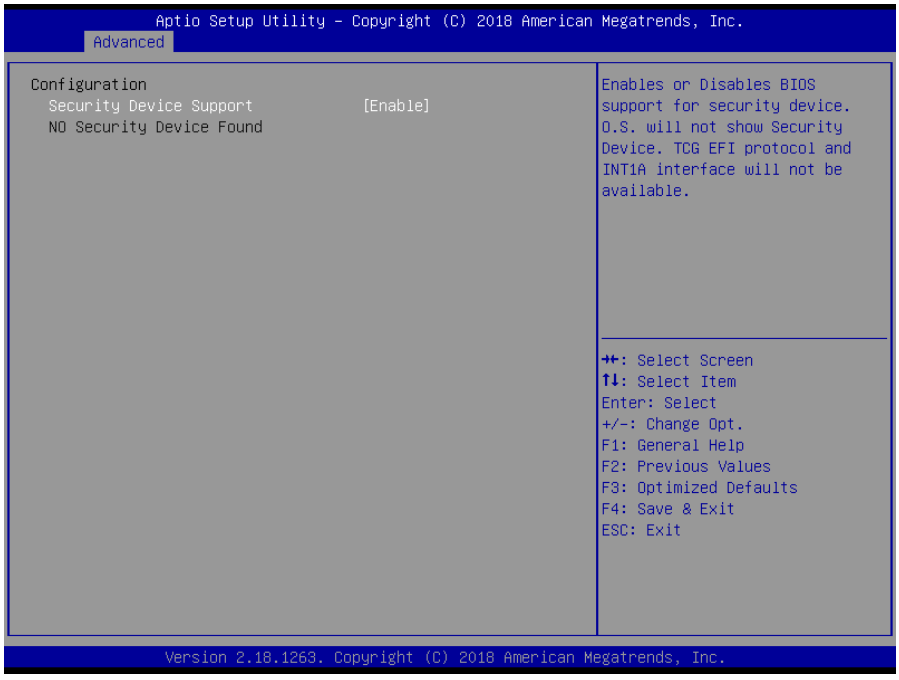
Visit the Avalue website (www.avalue.com.tw) to download the latest product and BIOS information.

3.6.2 Advanced Menu

This section allows you to configure your CPU and other system devices for basic operation through the following sub-menus.

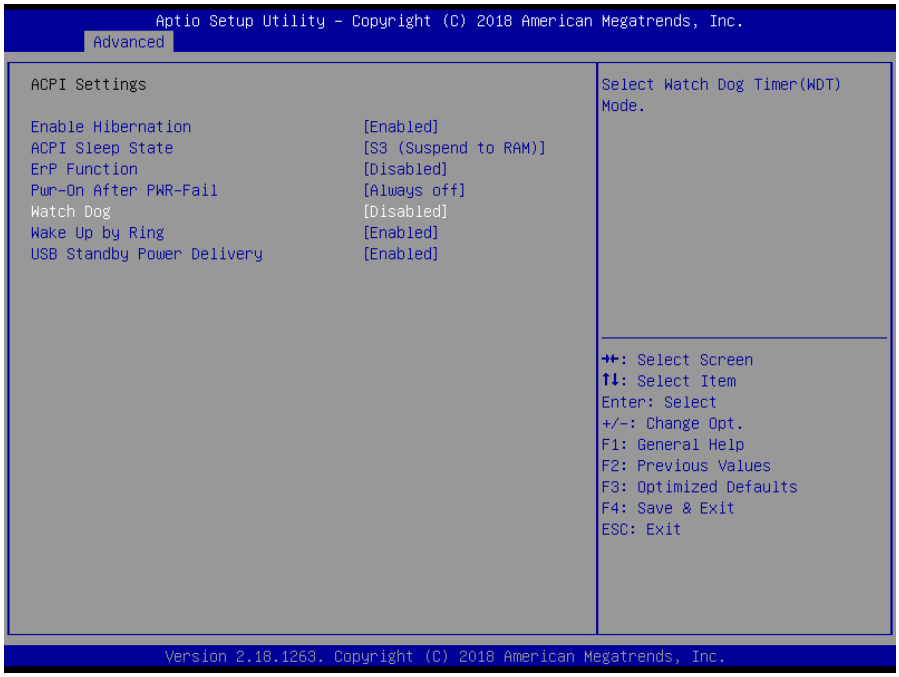


3.6.2.1 Trusted Computing



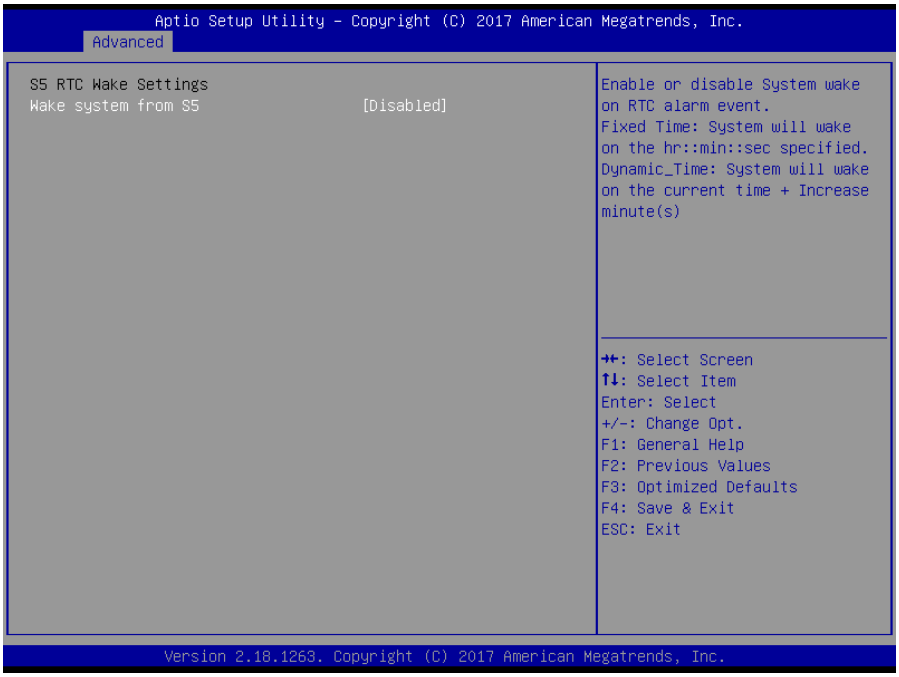
Item	Options	Description
Security Device Support	Disabled Enabled**[Default]**,	Enables or Disables BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INT1A interface will not be available.

3.6.2.2 ACPI Settings

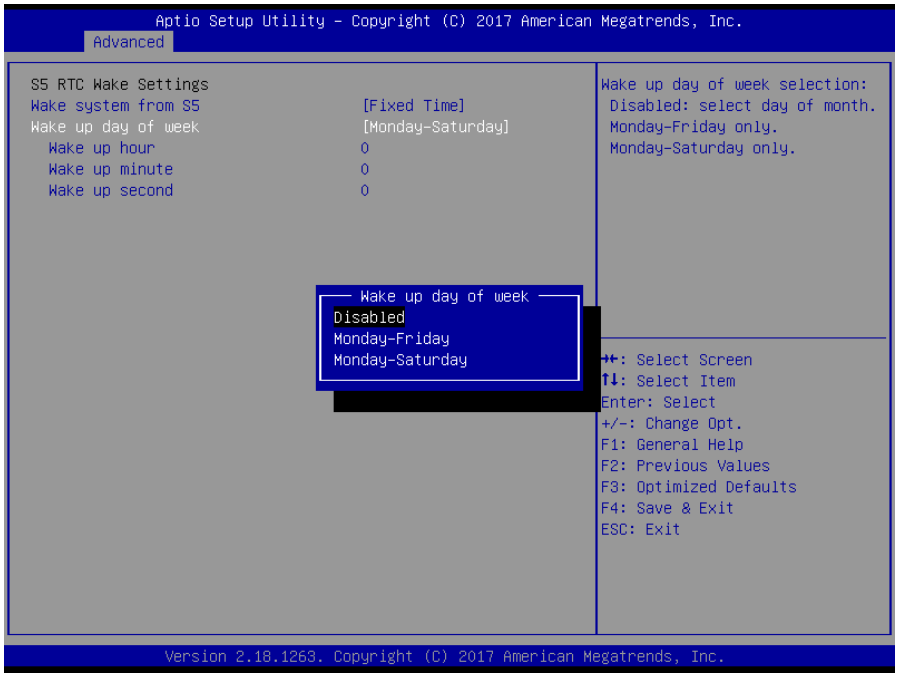


Item	Options	Description
Enable Hibernation	Disabled Enabled**[Default]**,	Enables or Disables System ability to Hibernate (OS/S4 Sleep State). This option may not be effective with some operating systems.
ACPI Sleep State	Suspend Disabled, S3 (Suspend to RAM)**[Default]**	Select the highest ACPI sleep state the system will enter when the SUSPEDN is button is pressed.
ErP Function	Disabled**[Default]**, Enabled	ErP (Deep S5) Function. Allow BIOS switching off peripheral power delivery at S5 state.
Pwr-On After PWR-Fail	Always Off**[Default]** Always On Keep last state	Specify what state to go to when power is re-applied after a power failure (G3 state).
Watch Dog	Disabled**[Default]**, 30 sec 40 sec 50 sec 1 min 2 min 10 min 30 min	Select Watch Dog Timer(WDT) Mode.
Wake Up by Ring	Disabled Enabled**[Default]**,	Enable/Disable system waked up by Ring signal from S3(Sleep). S4(Hibernate) and S5(Soft Off) States.
USB Standby Power Delivery	Disabled Enabled**[Default]**,	Enable/Disable USB Power delivery in S3 (Sleep), S4 (Hibernate) and S5 (Soft Off) States.

3.6.2.3 S5 RTC Wake Settings

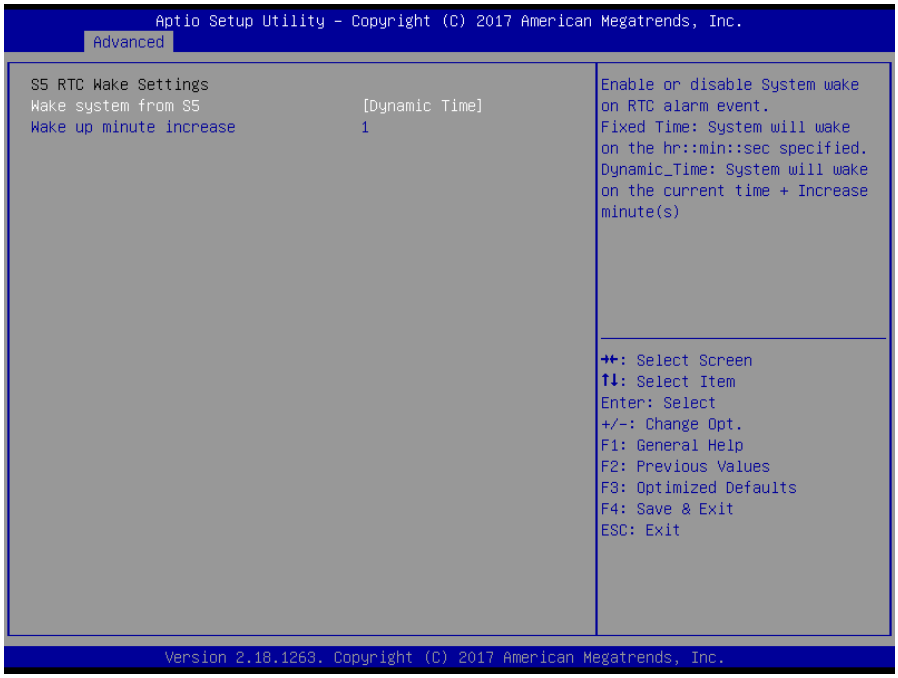


Item	Options	Description
Wake system from S5	Disabled**[Default]**, Fixed Time Dynamic Time	Enable or disable System wake on RTC alarm event. Fixed Time:System will wake on the hr::min::sec specified. Dynamic_Time:System will wake on the current time + Increase minute(s).



Item	Options	Description
Wake system from S5	Disabled**[Default]**, Fixed Time	Enable or disable System wake on RTC alarm event. Fixed Time:System will wake on the

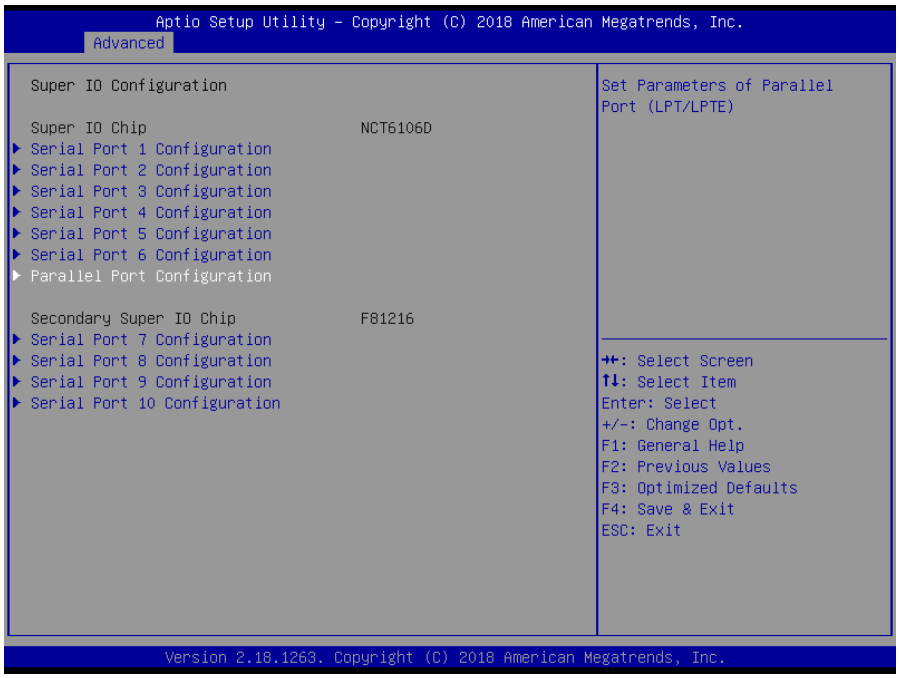
	Dynamic Time	hr::min::sec specified. Dynamic_Time:System will wake on the current time + Increase minute(s).
Wake up day of week	Disabled, Monday-Friday Monday-Saturday**[Default]**	Wake up day of week selection: Disabled: select day of month. Monday-Friday only. Monday-Saturday only.
Wake up hour	0	Select 0-23 For example enter 3 for 3am and 15 for 3pm.
Wake up minute	0	0-59.
Wake up second	0	0-59.



Item	Options	Description
Wake system from S5	Disabled, Fixed Time Dynamic Time**[Default]**	Enable or disable System wake on RTC alarm event. Fixed Time:System will wake on the hr::min::sec specified. Dynamic_Time:System will wake on the current time + Increase minute(s).
Wake up minute increase	1	1-5

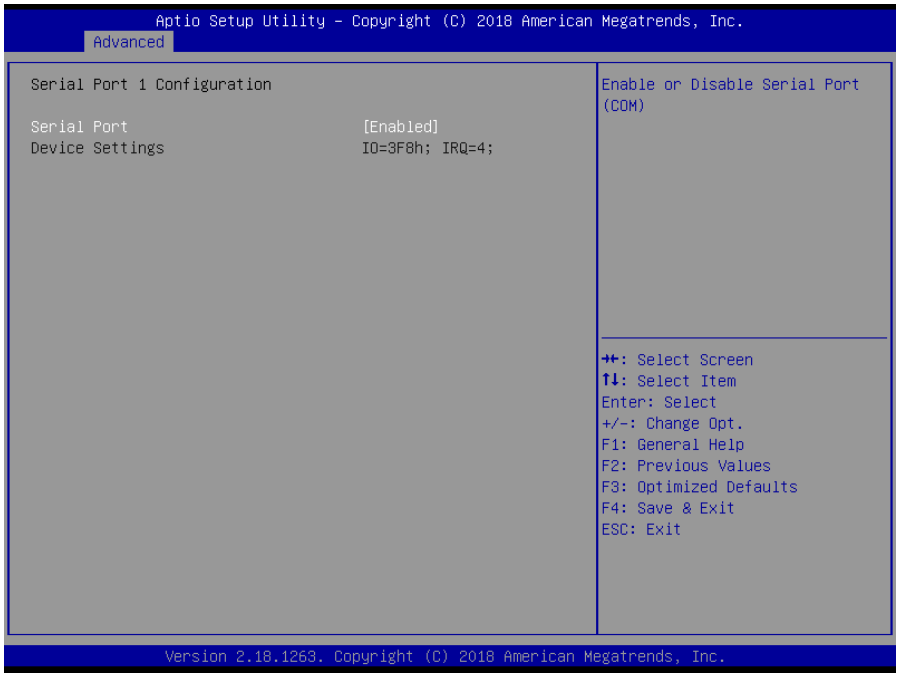
3.6.2.4 Super IO Configuration

You can use this item to set up or change the Super IO configuration for serial ports. Please refer to 3.6.2.6.1~ 3.6.2.6.7 for more information.



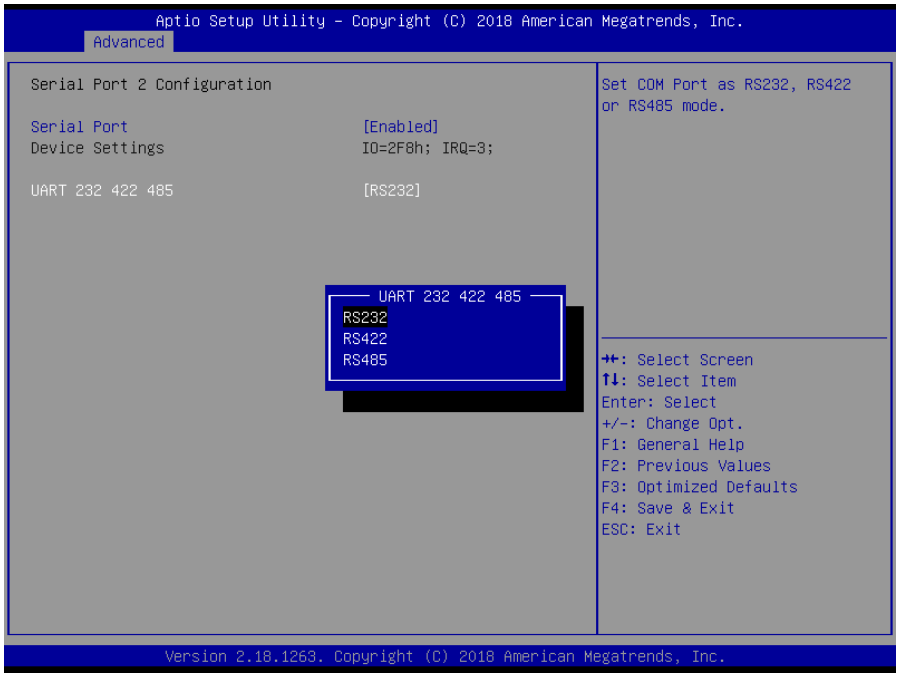
Item	Description
Serial Port 1 Configuration	Set Parameters of Serial Port 1 (COMA).
Serial Port 2 Configuration	Set Parameters of Serial Port 2 (COMB).
Serial Port 3 Configuration	Set Parameters of Serial Port 3 (COMC).
Serial Port 4 Configuration	Set Parameters of Serial Port 4 (COMD).
Serial Port 5 Configuration	Set Parameters of Serial Port 5 (COME).
Serial Port 6 Configuration	Set Parameters of Serial Port 6 (COMF).
Parallel Port Configuration	Set Parameters of Parallel Port (LPT/LPTE).
Serial Port 7 Configuration	Set Parameters of Serial Port 7 (COMG).
Serial Port 8 Configuration	Set Parameters of Serial Port 8 (COMH).
Serial Port 9 Configuration	Set Parameters of Serial Port 9 (COMI).
Serial Port 10 Configuration	Set Parameters of Serial Port 10 (COMJ).

3.6.2.4.1 Serial Port 1 Configuration



Item	Option	Description
Serial Port	Disabled, Enabled**[Default]**	Enable or Disable Serial Port (COM).

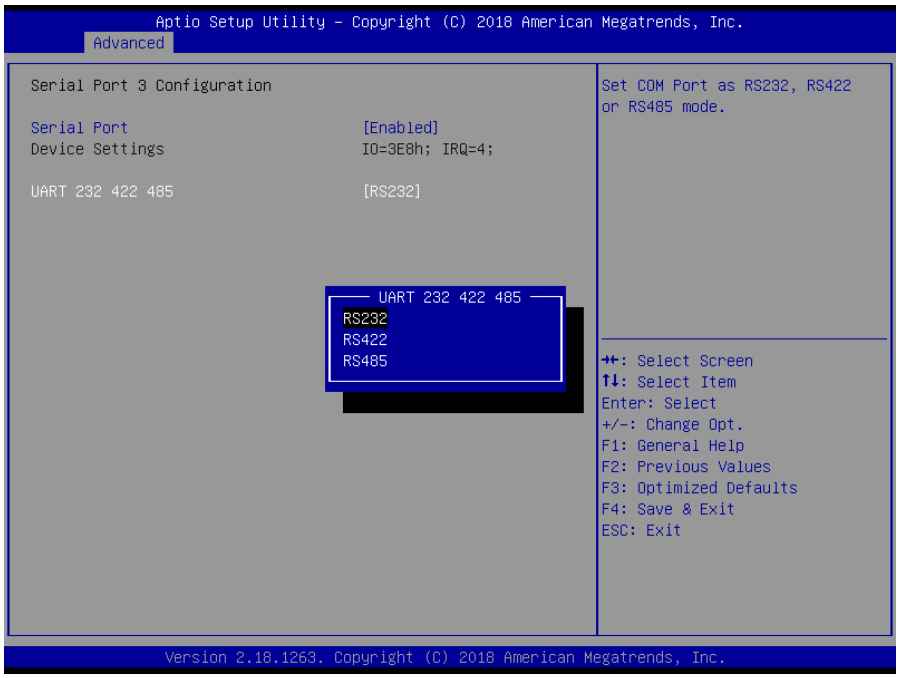
3.6.2.4.2 Serial Port 2 Configuration



Item	Option	Description
Serial Port	Disabled, Enabled**[Default]**	Enable or Disable Serial Port (COM).
UART 232 422 485	RS232**[Default]**	Set COM Port as RS232, RS422 or RS485 mode.

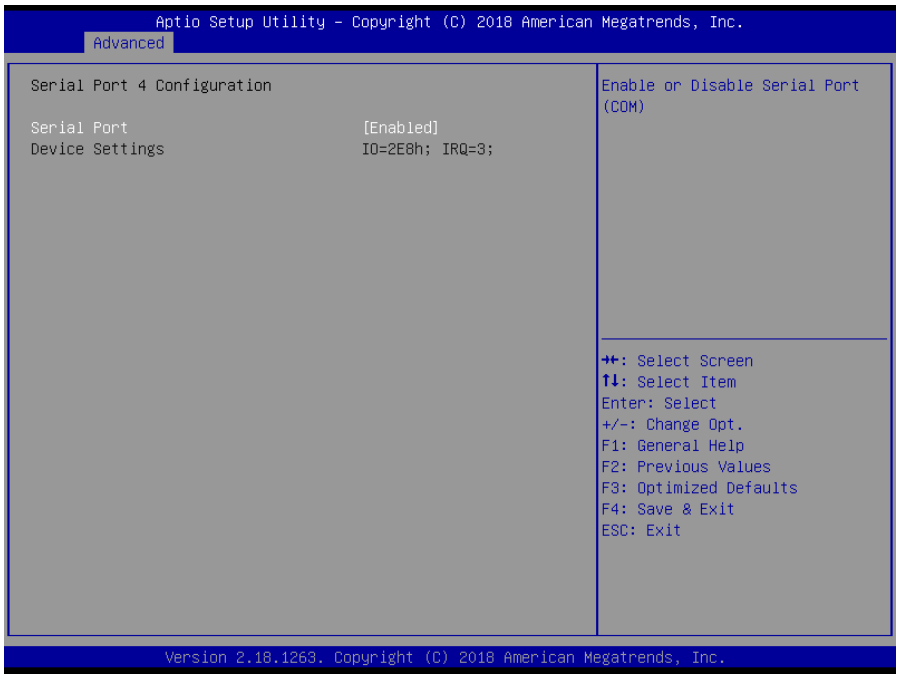
	RS422 RS485	

3.6.2.4.3 Serial Port 3 Configuration



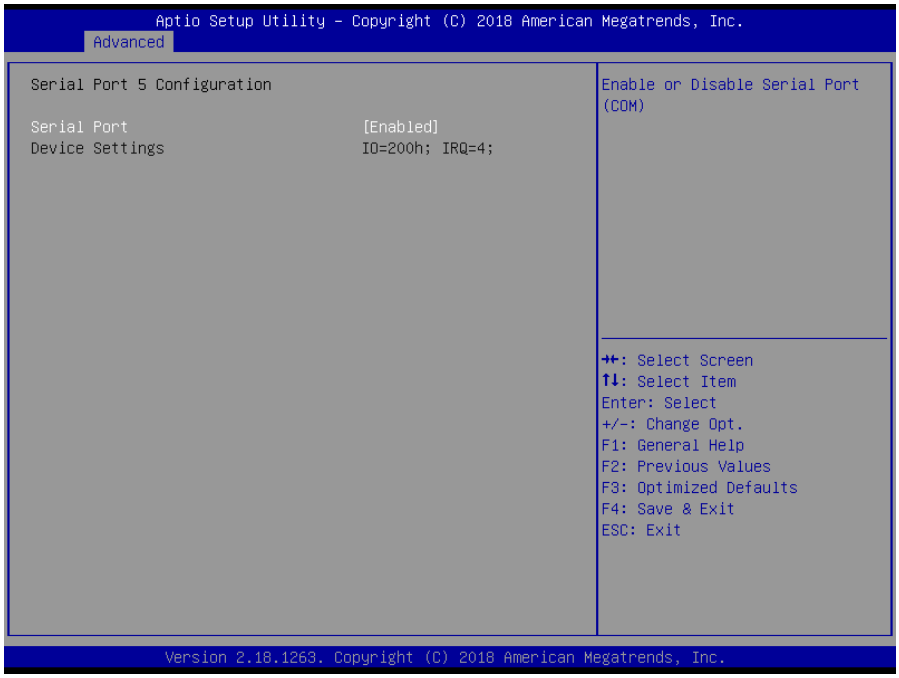
Item	Option	Description
Serial Port	Disabled, Enabled**[Default]**	Enable or Disable Serial Port (COM).
UART 232 422 485	RS232**[Default]** RS422 RS485	Set COM Port as RS232, RS422 or RS485 mode.

3.6.2.4.4 Serial Port 4 Configuration



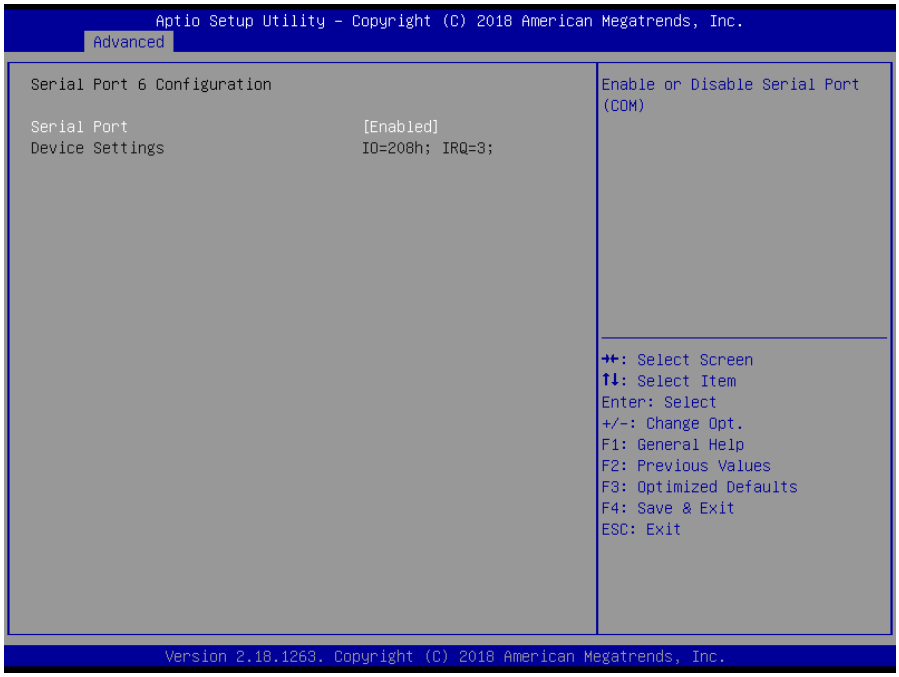
Item	Option	Description
Serial Port	Disabled, Enabled**[Default]**	Enable or Disable Serial Port (COM).

3.6.2.4.5 Serial Port 5 Configuration



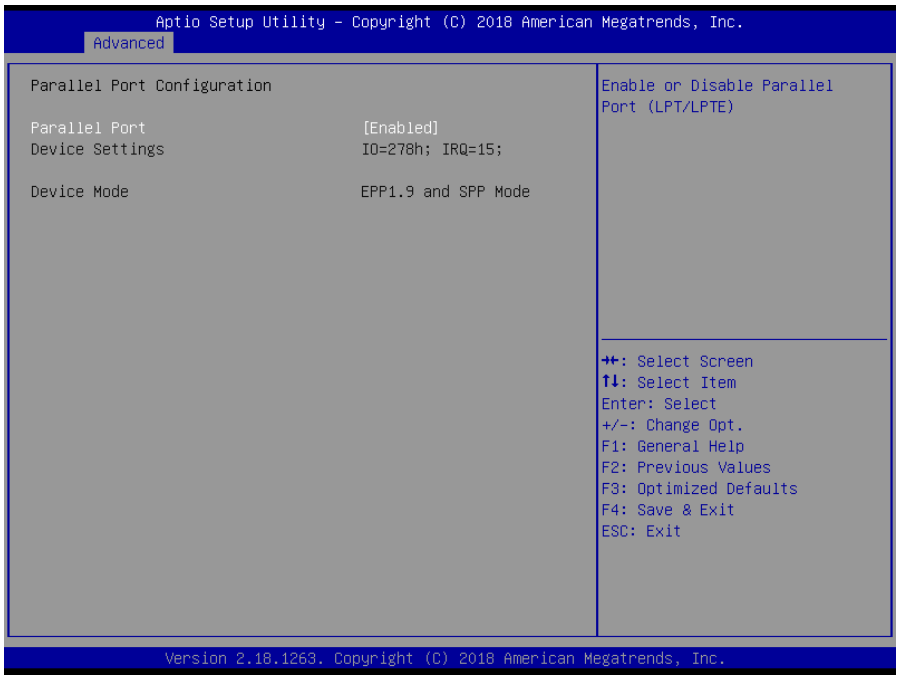
Item	Option	Description
Serial Port	Disabled, Enabled**[Default]**	Enable or Disable Serial Port (COM).

3.6.2.4.6 Serial Port 6 Configuration



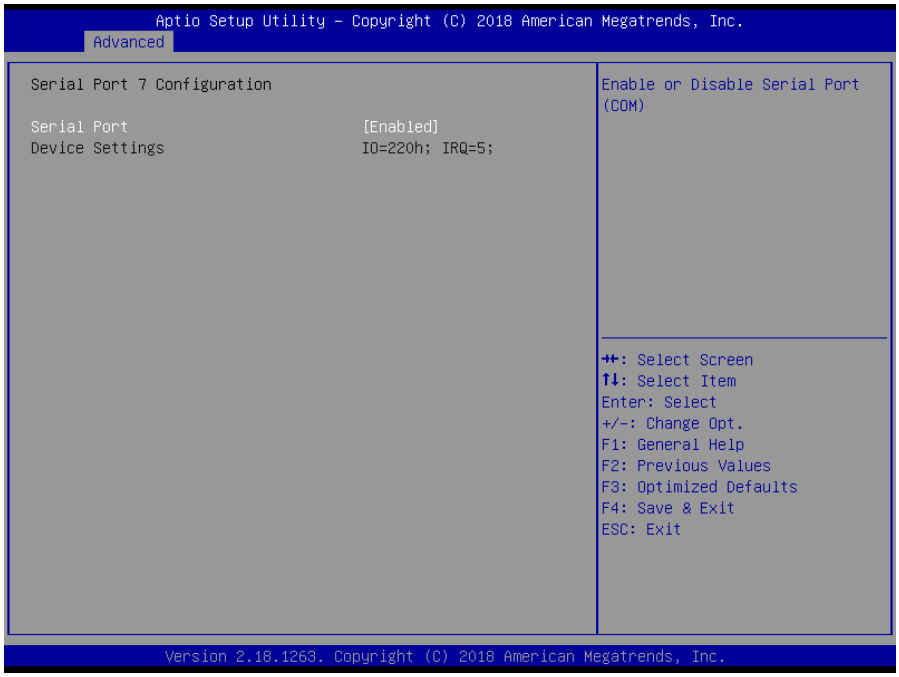
Item	Option	Description
Serial Port	Disabled, Enabled**[Default]**	Enable or Disable Serial Port (COM).

3.6.2.4.7 Parallel Port Configuration



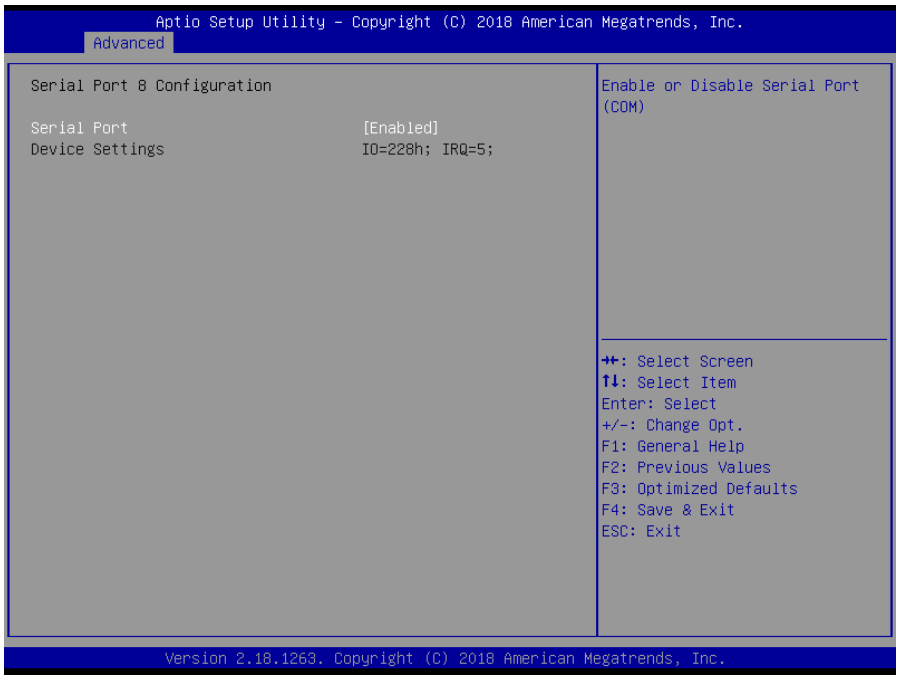
Item	Option	Description
Parallel Port	Disabled, Enabled**[Default]**	Enable or Disable Parallel Port (LPT/LPTE).

3.6.2.4.8 Serial Port 7 Configuration



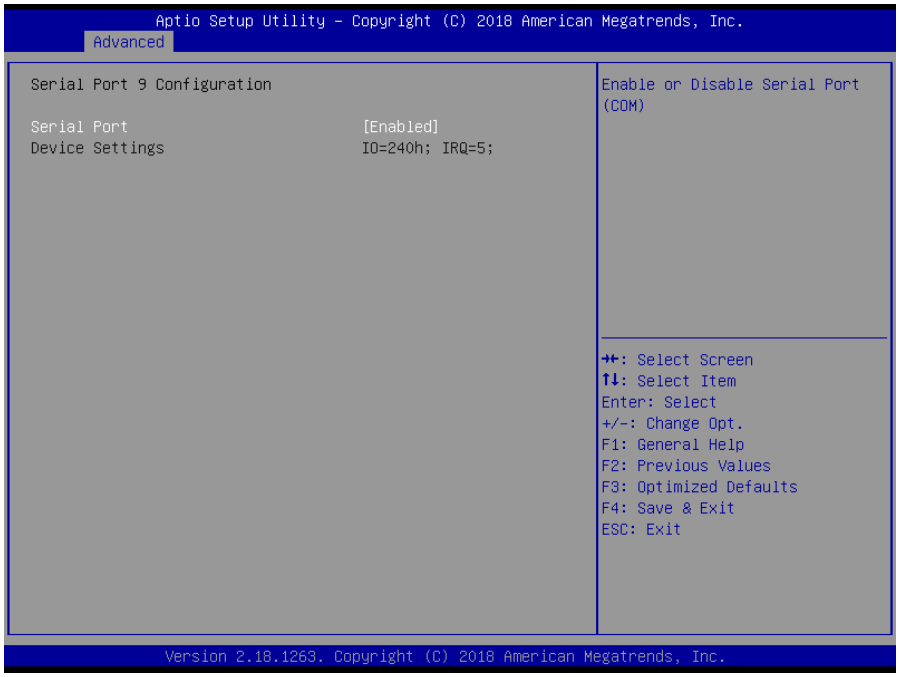
Item	Option	Description
Serial Port	Disabled, Enabled**[Default]**	Enable or Disable Serial Port (COM).

3.6.2.4.9 Serial Port 8 Configuration



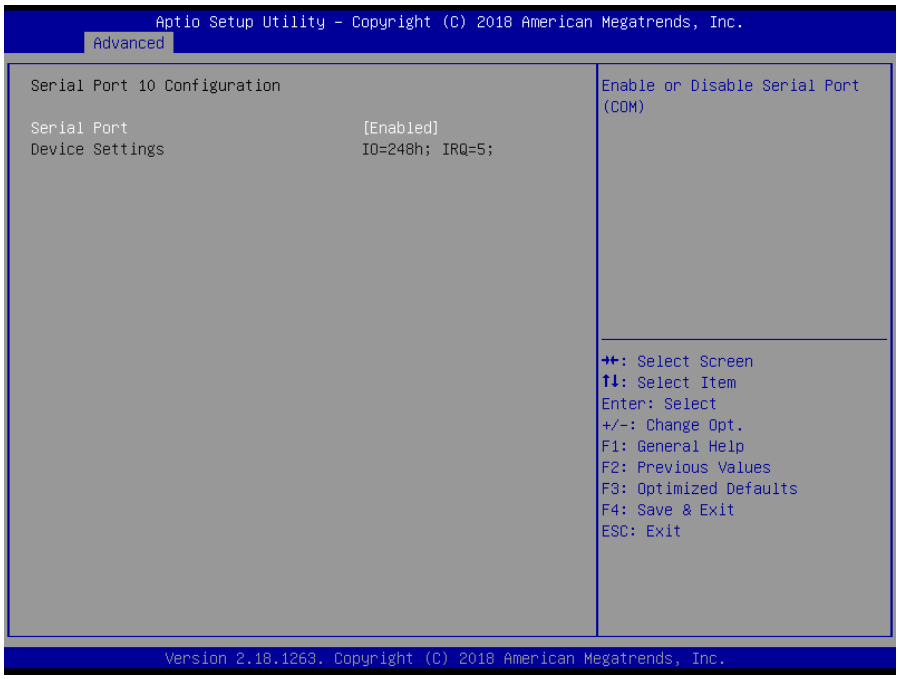
Item	Option	Description
Serial Port	Disabled, Enabled**[Default]**	Enable or Disable Serial Port (COM).

3.6.2.4.10 Serial Port 9 Configuration



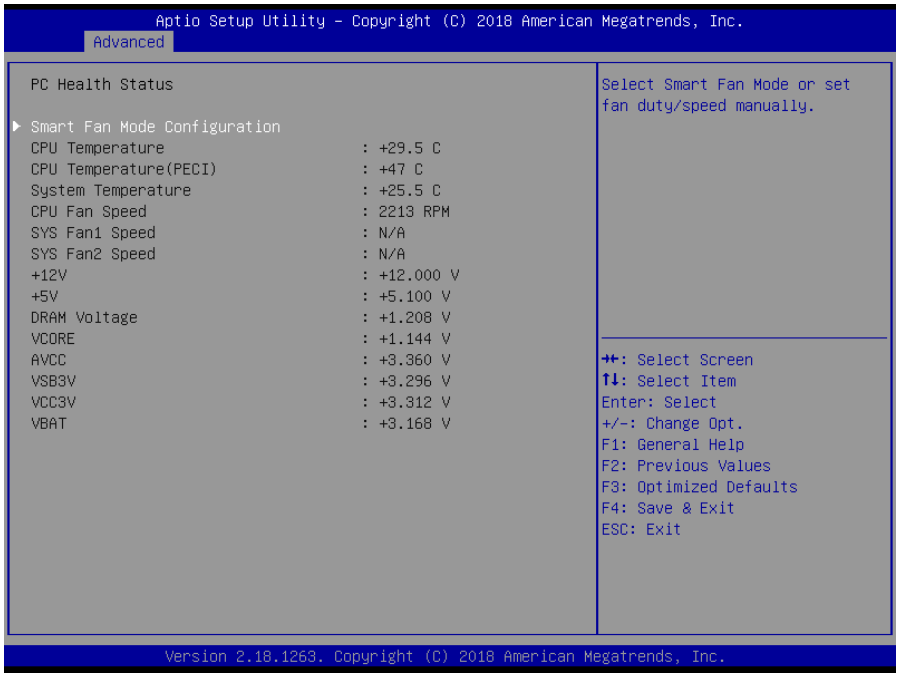
Item	Option	Description
Serial Port	Disabled, Enabled**[Default]**	Enable or Disable Serial Port (COM).

3.6.2.4.11 Serial Port 10 Configuration

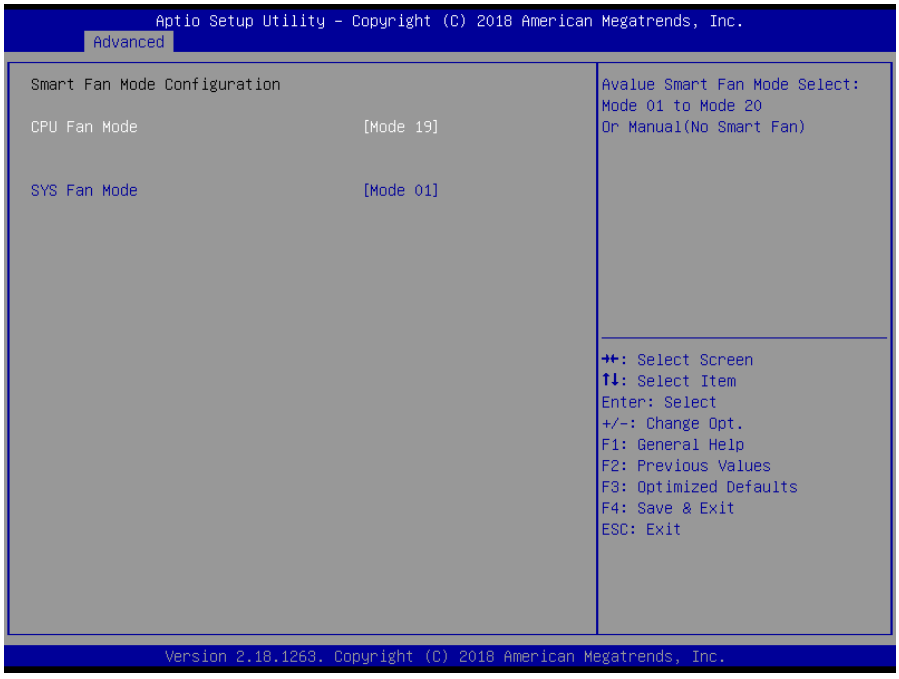


Item	Option	Description
Serial Port	Disabled, Enabled**[Default]**	Enable or Disable Serial Port (COM).

3.6.2.5 NCT6106D H/W Monitor



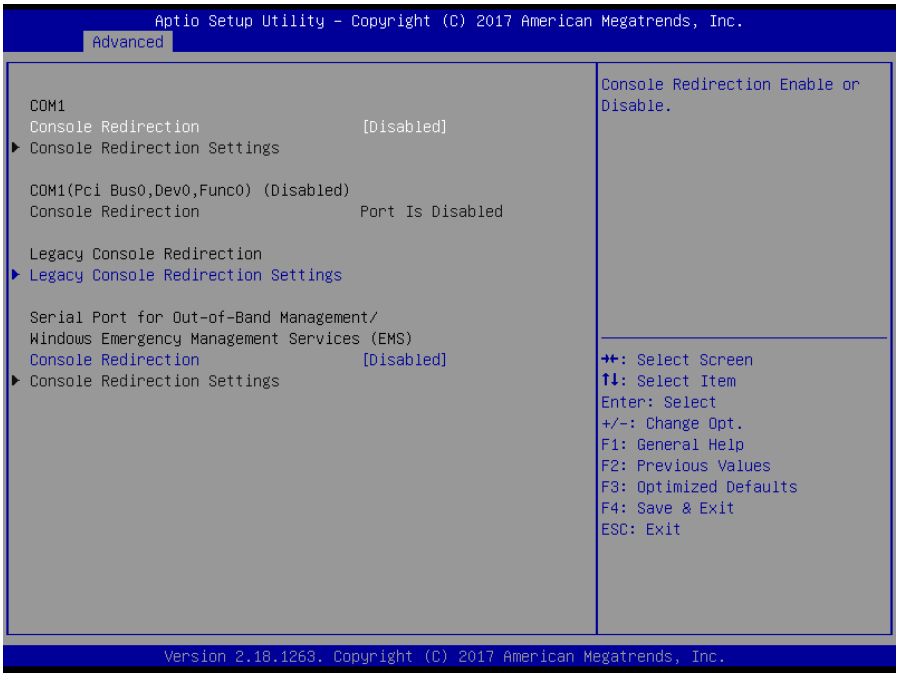
3.6.2.5.1 Smart Fan Mode Configuration



Item	Option	Description
CPU Fan Mode	Manual Mode Mode 01 Mode 02 Mode 03 Mode 04 Mode 05 Mode 06	Avalue Smart Fan Mode Select: Mode 01 to Mode 20 Or Manual(No Smart Fan)

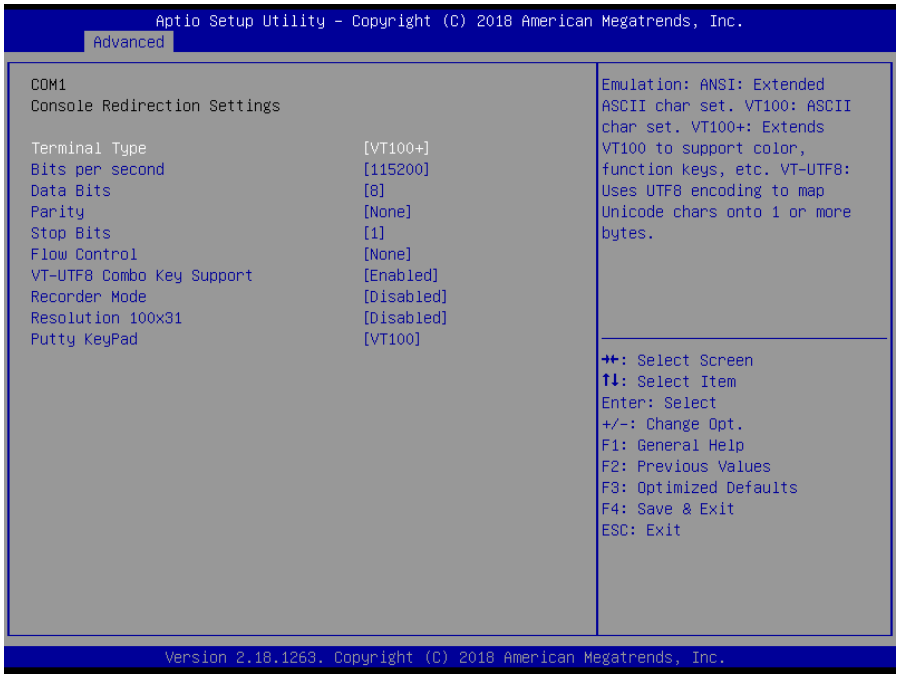
	Mode 07 Mode 08 Mode 09 Mode 10 Mode 11 Mode 12 Mode 13 Mode 14 Mode 15 Mode 16 Mode 17 Mode 18 Mode 19**[Default]**, Mode 20	
SYS FAN Mode	Manual Mode Mode 01**[Default]**, Mode 02 Mode 03 Mode 04 Mode 05 Mode 06 Mode 07 Mode 08 Mode 09 Mode 10 Mode 11 Mode 12 Mode 13 Mode 14 Mode 15 Mode 16 Mode 17 Mode 18 Mode 19 Mode 20	Avalue Smart Fan Mode Select: Mode 01 to Mode 20 Or Manual(No Smart Fan)

3.6.2.6 Serial Port Console Redirection



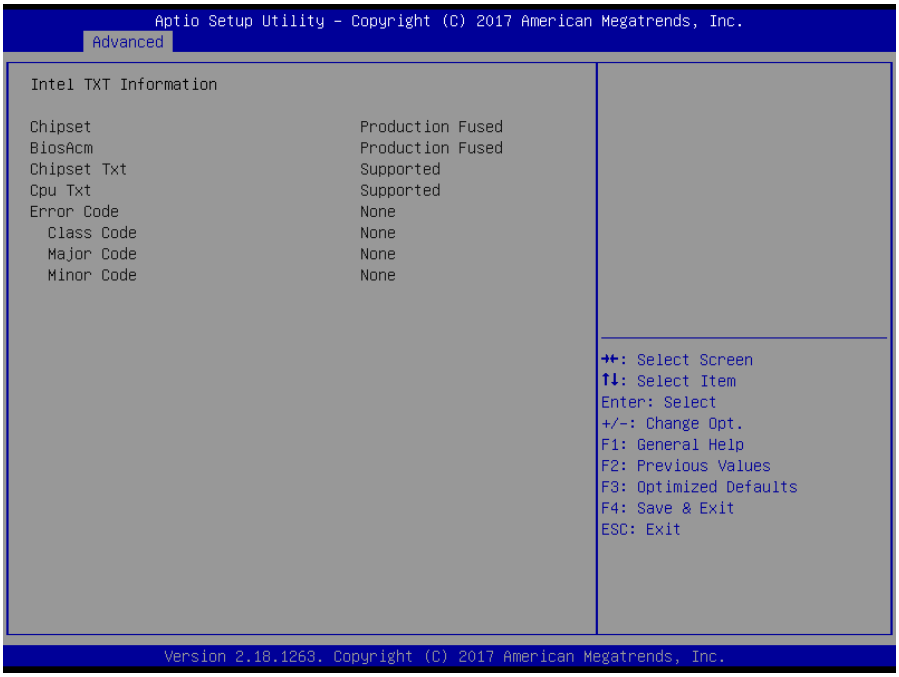
Item	Options	Description
Console Redirection	Disabled**[Default]**, Enabled	Console Redirection Enable or Disable.
Legacy Console Redirection Settings		Legacy Console Redirection Settings
Console Redirection	Disabled**[Default]**, Enabled	Console Redirection Enable or Disable.

3.6.2.6.1 COM1

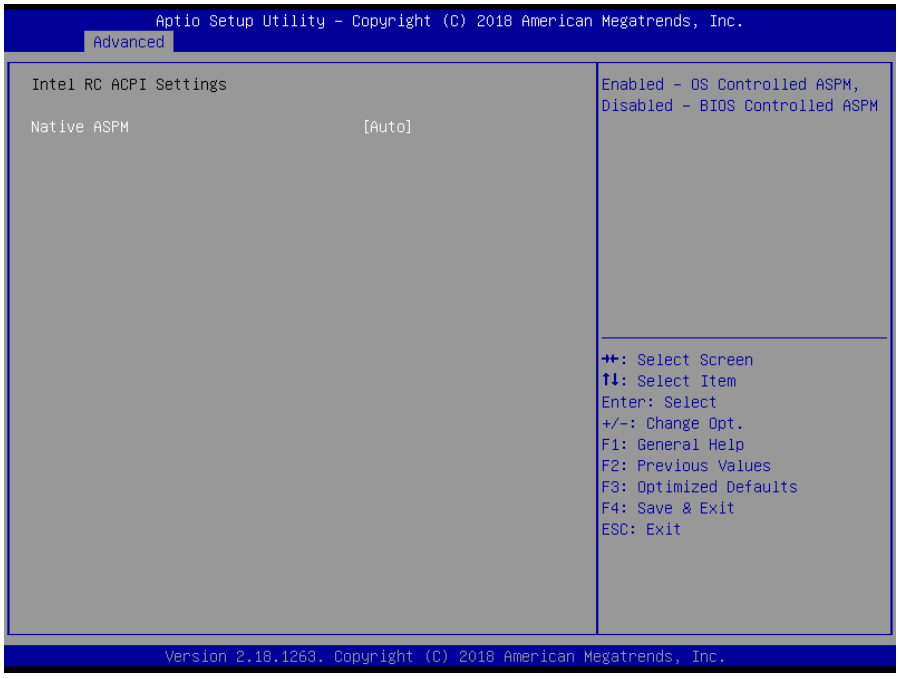


Item	Option	Description
Terminal Type	VT100 VT100+**[Default]** VT-UTF8 ANSI	Emulation: ANSI: Extended ASCII char set. VT100: ASCII char set. VT100+: Extends VT100 to support color, function keys, etc. VT-UTF8: Uses UTF8 encoding to map Unicode chars onto 1 or more bytes.
Bits per second	9600 19200 38400 57600 115200**[Default]**	Selects serial port transmission speed. The speed must be matched on the other side. Long or noisy lines may require lower speeds.
Data Bits	7 8**[Default]**	Data Bits.
Parity	None**[Default]** Even Odd Mark Space	A parity bit can be sent with the data bits to detect some transmission errors. Even: parity bit is 0 if the num of 1's in the data bits is even. Odd: parity bit is 0 if num of 1's in the data bits is odd. Mark: Parity bit is always. 1. Space: Parity bit is always 0. Mark and Space Parity do not allow for error detection. They can be used as an additional data bit.
Stop Bits	1**[Default]** 2	Stop bits indicate the end of a serial data packet. (A start bit indicates the beginning). The standard setting is 1 stop bit. Communication with slow devices may require more than 1 stop bit.
Flow Control	None**[Default]** Hardware RTS/CTS	Flow control can prevent data loss from buffer overflow. When sending data, if the receiving buffers are full, a 'stop' signal can be sent to stop the data flow. Once the buffers are empty, a 'start' signal can be sent to re-start the flow. Hardware flow control uses two wires to send start/stop signals.
VT-UTF8 Combo Key Support	Disabled Enabled**[Default]**	Enable VT-UTF8 Combination Key Support for ANSI/VT100 terminals.
Recorder Mode	Disabled**[Default]** Enabled	With this mode enabled only text will be sent. This is to capture Terminal data.
Resolution 100×31	Disabled**[Default]** Enabled	Enables or disables extended terminal resolution.
Putty KeyPad	VT100**[Default]** LINUX XTERMR6 SCO ESCN VT400	Select FunctionKey and KeyPad on Putty.

3.6.2.7 Intel TXT Configuration

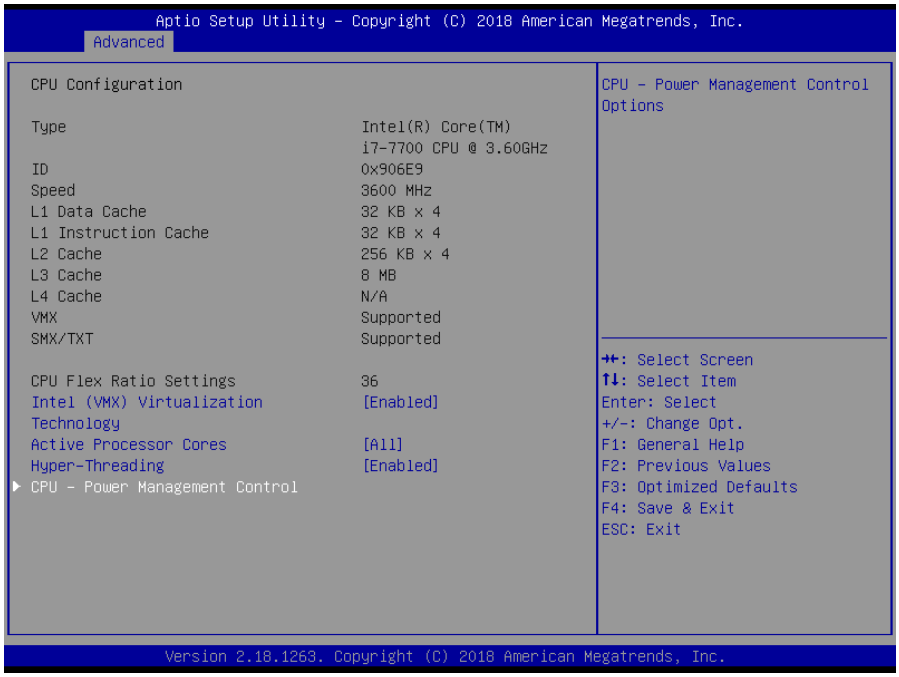


3.6.2.8 Intel RC ACPI Settings



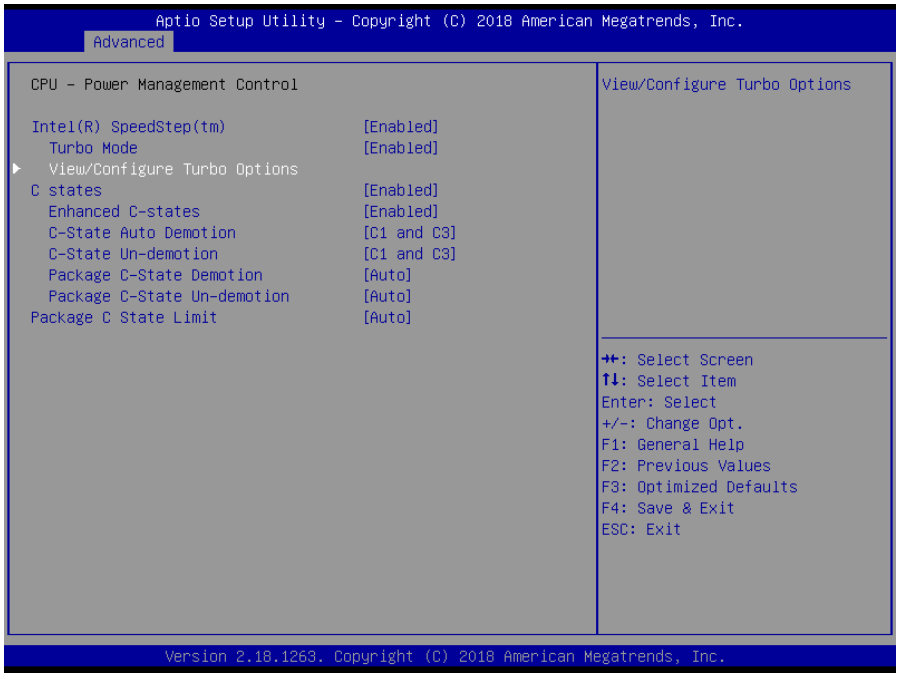
Item	Option	Description
Native ASPM	Auto**[Default]** Enabled Disabled	Enabled-OS Controlled ASPM, Disabled-BIOS Controlled ASPM

3.6.2.9 CPU Configuration



Item	Options	Description
Intel (VMX) Virtualization Technology	Disabled Enabled**[Default]**,	When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.
Active Processor Cores	All**[Default]**, 1 2 3 4 5 6 7 8	Number of cores to enable in each processor package.
Hyper-Threading	Disabled Enabled**[Default]**,	Enabled for Windows XP and Linux(OS optimized for Hyper-Threading Technology) and Disabled for other OS (OS not optimized for Hyper-Threading Technology).

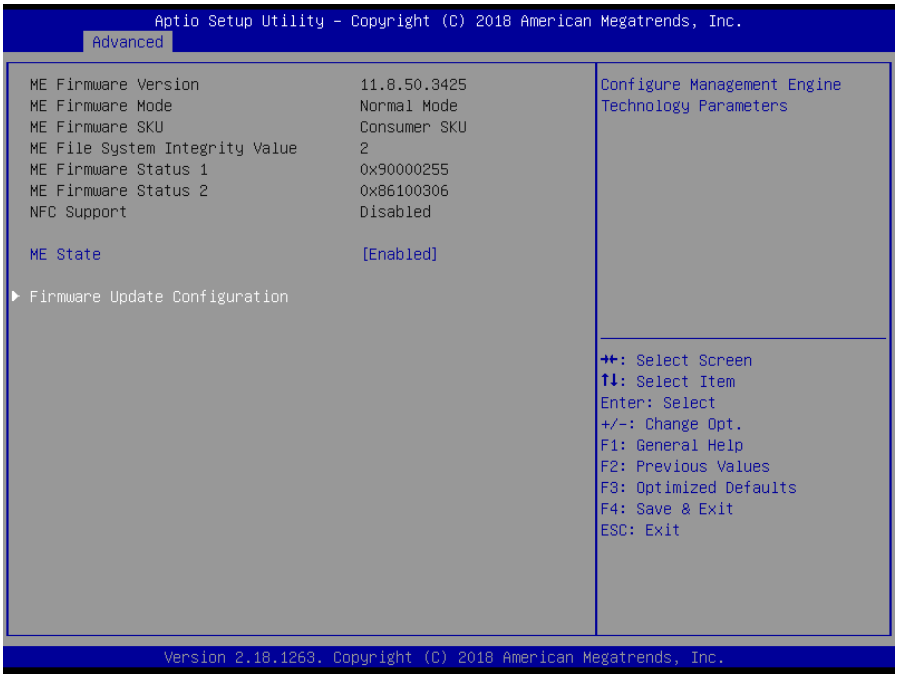
3.6.2.9.1 CPU-Power Management Control



Item	Option	Description
Intel® SpeedStep™	Disabled, Enabled**[Default]**	Allows more than two frequency ranges to be supported.
Turbo Mode	Disabled, Enabled**[Default]**	Enable/Disable processor Turbo Mode (requires EMTTM enabled too). AUTO means enabled, unless max turbo ratio is bigger than 16 – SKL A0 W/A.
C States	Enabled**[Default]** , Disabled	Enable/Disable CPU Power Management. Allows CPU to go to C states when it's not 100% utilized.
Enhanced C-states	Disabled, Enabled**[Default]**	Enable/Disable C1E. When enabled, CPU will switch to minimum speed when all cores enter C-State.
C-State Auto Demotion	Disabled C1 C3 C1 and C3**[Default]**	Configure C-State Auto Demotion.
C-State Un-demotion	Disabled C1 C3 C1 and C3**[Default]**	Configure C-State Un-demotion.
Package C-State Demotion	Disabled, Enabled Auto**[Default]**	Enable or Disable Package C-State Demotion.0:Disable;1:Enable;2:Auto (Auto:Enabled for Skylake for Kabylake)
Package C-State Un-demotion	Disabled, Enabled Auto**[Default]**	Enable or Disable Package C-State UnDemotion. 0:Disable;1:Enable;2:Auto (Auto:Enabled for Skylake; Disabled for Kabylake)
Package C State Limit	Auto**[Default]** Cpu Default	Maximum Package C State Limit Setting. Cpu Default: Leaves to Factory default

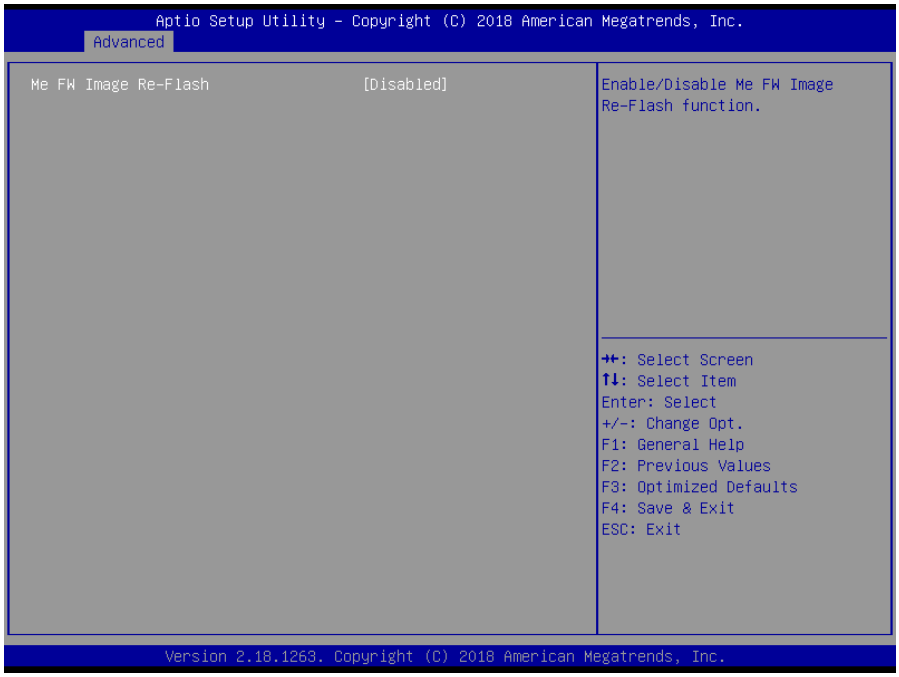
	C10 C9 C8 C7S C7 C6 C3 C2 C0/C1	value.Auto :Initializes to deepest available Package C State Limit.

3.6.2.10 PCH-FW Configuration



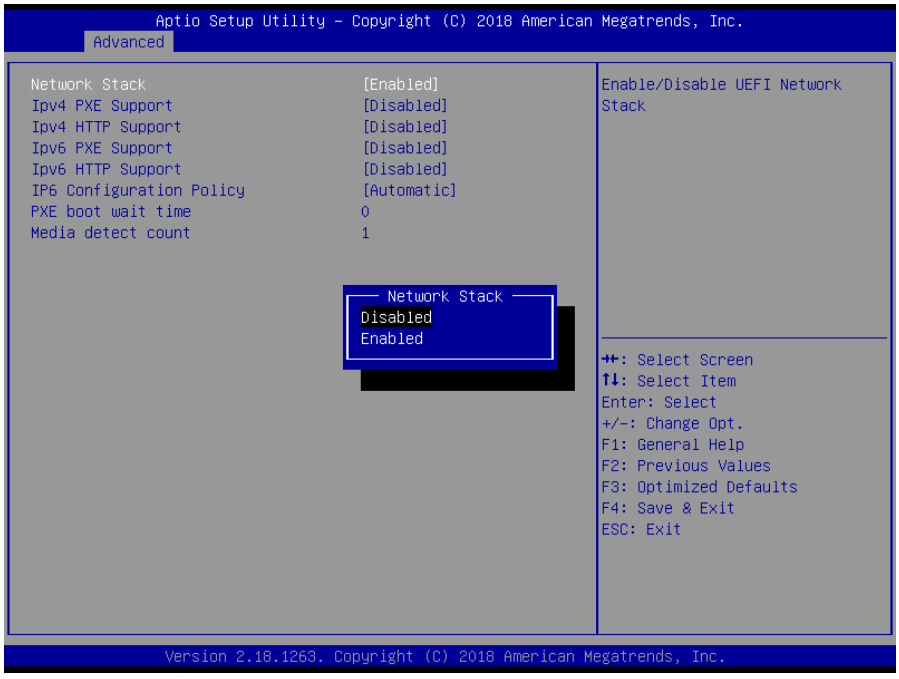
Item	Options	Description
ME State	Disabled, Enabled**[Default]**	When Disabled ME will be put into ME Temporarily Disabled Mode.

3.6.2.10.1 Firmware Update Configuration



Item	Option	Description
Me FW Image Re-Flash	Disabled**[Default]**, Enabled	Enable/Disable Me FW Image Re-Flash function.

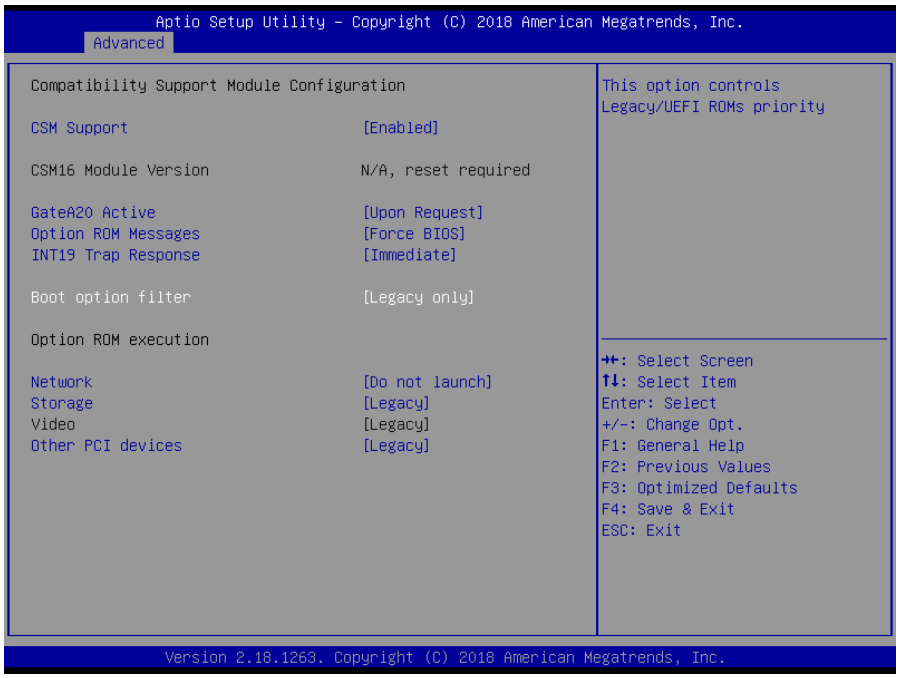
3.6.2.11 Network Stack Configuration

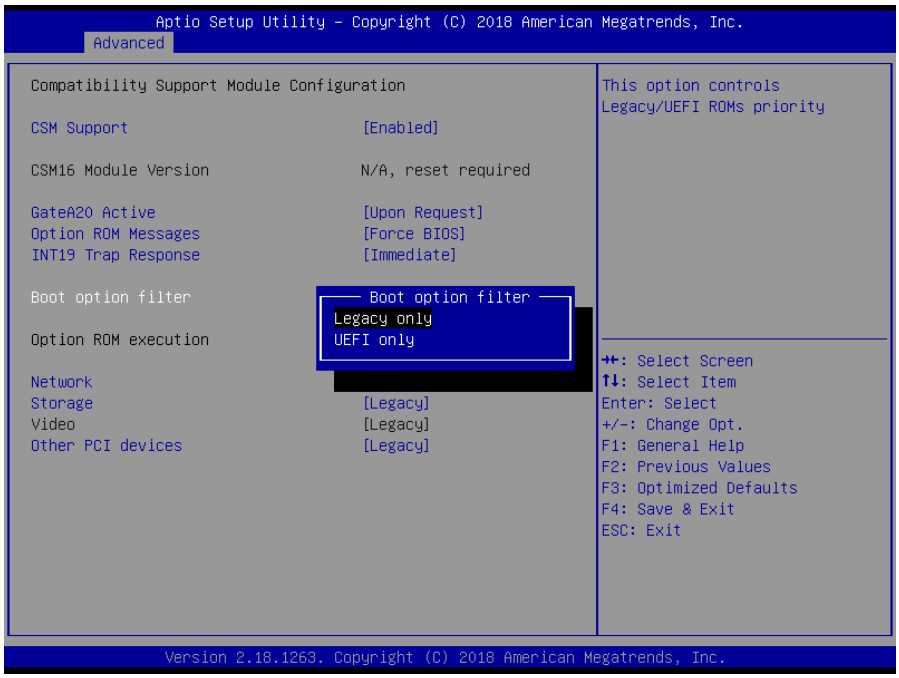


Item	Options	Description
Network Stack	Disabled**[Default]** Enabled	Enable/Disable UEFI Network Stack.
Ipv4 PXE Support	Disabled**[Default]** Enabled	Enable/Disable IPv4 PXE boot support. If disabled, IPv4

		PXE boot support will not be available.
Ipv4 HTTP Support	Disabled**[Default]** Enabled	Enable/Disable IPv4 HTTP boot support. If disabled, IPv4 HTTP boot support will not be available.
Ipv6 PXE Support	Disabled**[Default]** Enabled	Enable/Disable IPv6 PXE boot support. If disabled, IPv6 PXE boot support will not be available.
Ipv6 HTTP Support	Disabled**[Default]** Enabled	Enable/Disable IPv6 HTTP boot support. If disabled, IPv6 HTTP boot support will not be available.
Ip6 Configuration Policy	Automatic**[Default]** Manual	Set IP6 Configuration Policy
PXE boot wait time	0	Wait time to press ESC key to abort the PXE boot.
Media detect count	1	Number of times presence of media will be checked.

3.6.2.12 CSM Configuration

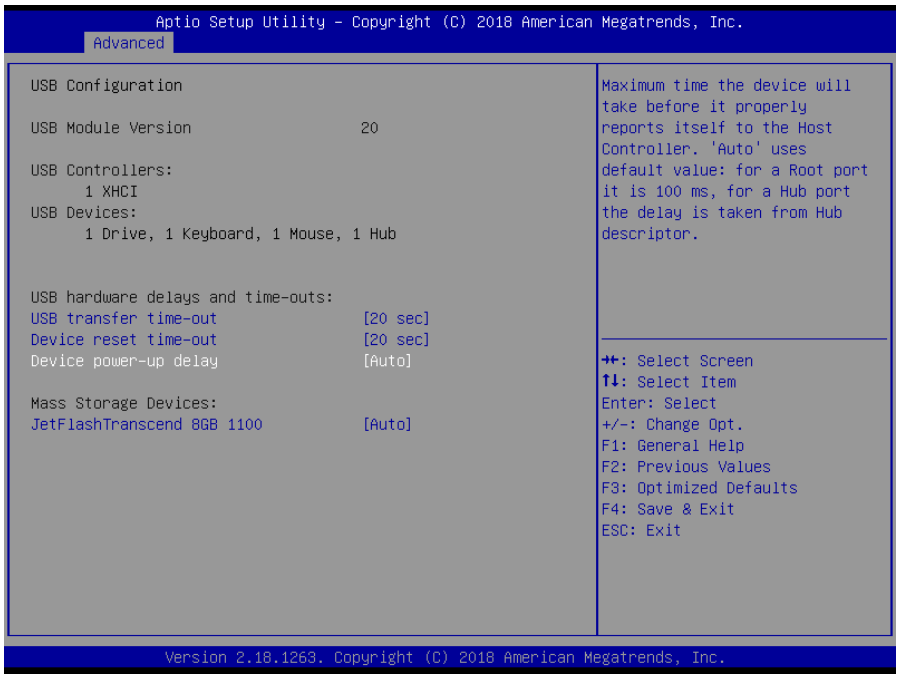




Item	Options	Description
CSM Support	Disabled**[Default]** Enabled	Enable/Disable CSM Support.
GateA20 Active	Upon Request**[Default]** Always	UPON REQUEST – GA20 can be disabled using BIOS services. ALWAYS – do not allow disabling GA20; this option is useful when any RT code is executed above 1MB.
Option ROM Messages	Force BIOS**[Default]** Keep Current	Set display mode for Option ROM.
INT19 Trap Response	Immediate**[Default]** Postponed	BIOS reaction on INT19 trapping by Option ROM: IMMEDIATE – execute the trap right away; POSTPONED – execute the trap during legacy boot.
Boot option filter	Legacy only**[Default]** UEFI only	This option controls Legacy/UEFI ROMs priority.
Network	Do not launch**[Default]** UEFI Legacy	Controls the execution of UEFI and Legacy PXE OpROM.
Storage	Do not launch UEFI Legacy**[Default]**	Controls the execution of UEFI and Legacy Storage OpROM.
Other PCI devices	Do not launch UEFI Legacy**[Default]**	Determines OpROM execution policy for devices other than Network, Storage, or Video.

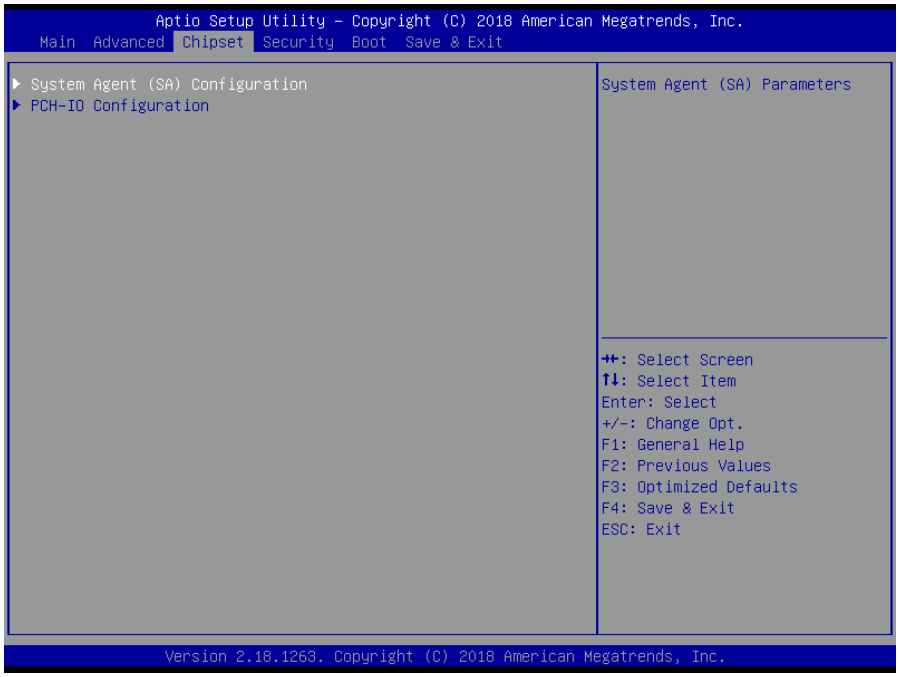
3.6.2.13 USB Configuration

The USB Configuration menu helps read USB information and configures USB settings.

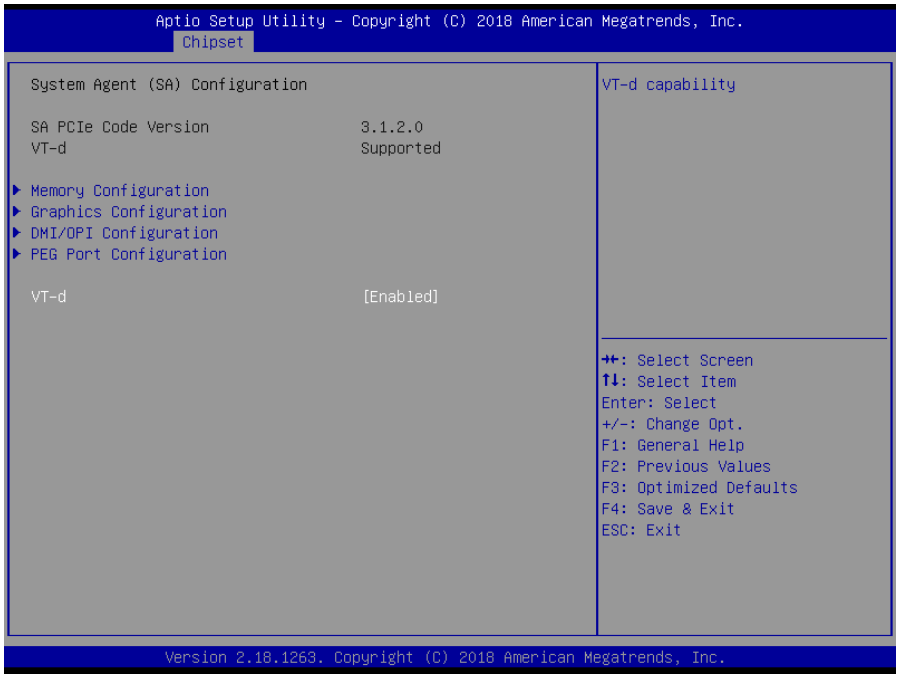


Item	Options	Description
USB transfer time-out	1 sec 5 sec 10 sec 20 sec**[Default]**	The time-out value for Control, Bulk, and Interrupt transfers.
Device reset time-out	10 sec 20 sec**[Default]** 30 sec 40 sec	USB mass storage device Start Unit command time-out.
Device power-up delay	Auto**[Default]** Manual	Maximum time the device will take before it properly reports itself to the Host Controller. 'Auto' uses default value: for a Root port it is 100ms, for a Hub port the delay is taken form Hub descriptor.
Mass Storage Devices	Auto**[Default]** Floppy Forced FDD Hard Disk CD-ROM	Mass storage device emulation type. 'AUTO' enumerates devices according to their media format. Optical drives are emulated as 'CDROM', drives with no media will be emulated according to a drive type.

3.6.3 Chipset

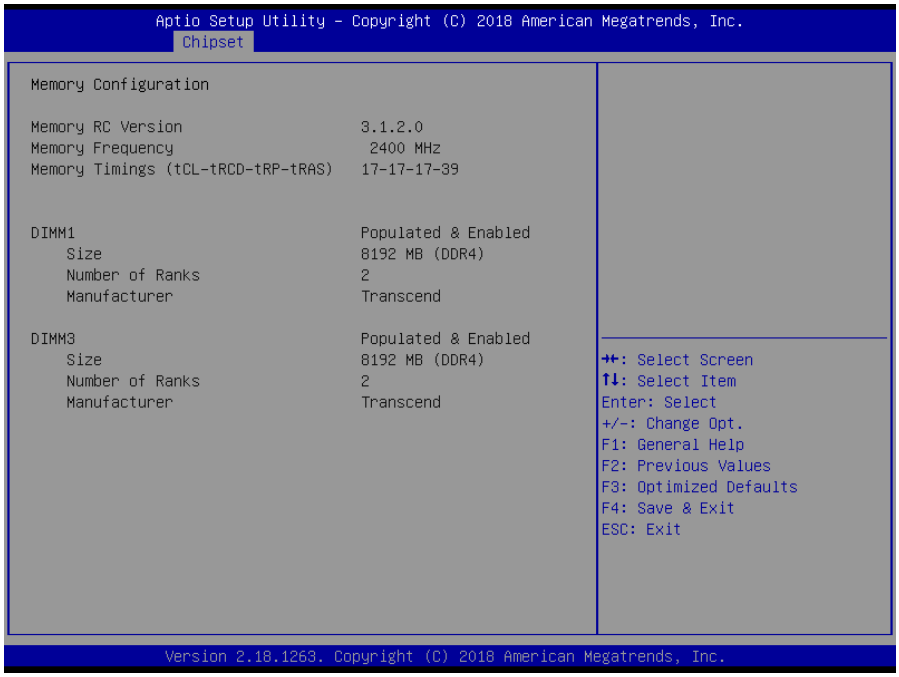


3.6.3.1 System Agent (SA) Configuration

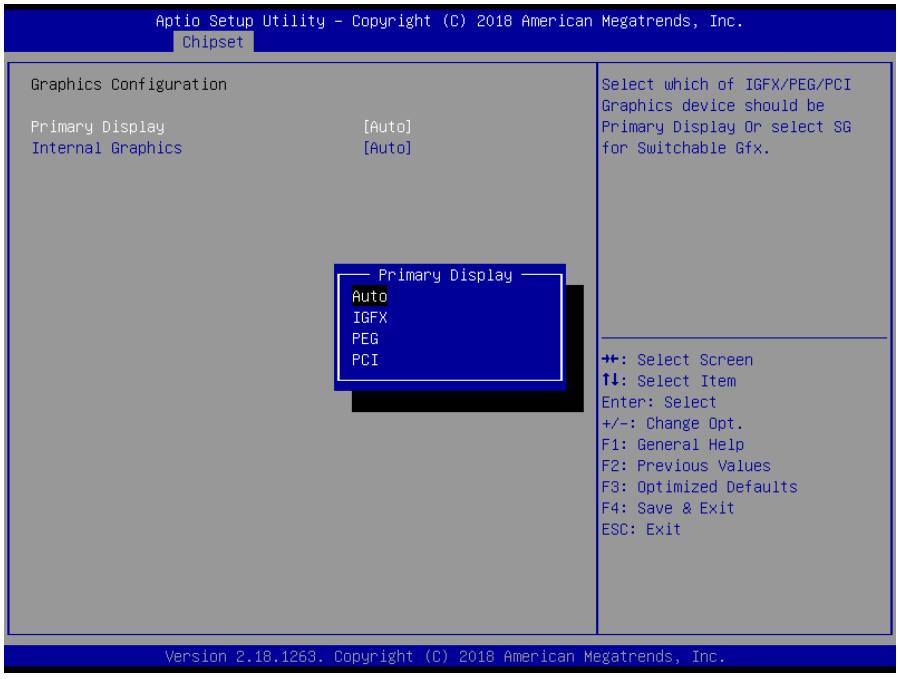


Item	Option	Description
VT-d	Disabled Enabled**[Default]**	VT-d capability.

3.6.3.1.1 Memory Configuration

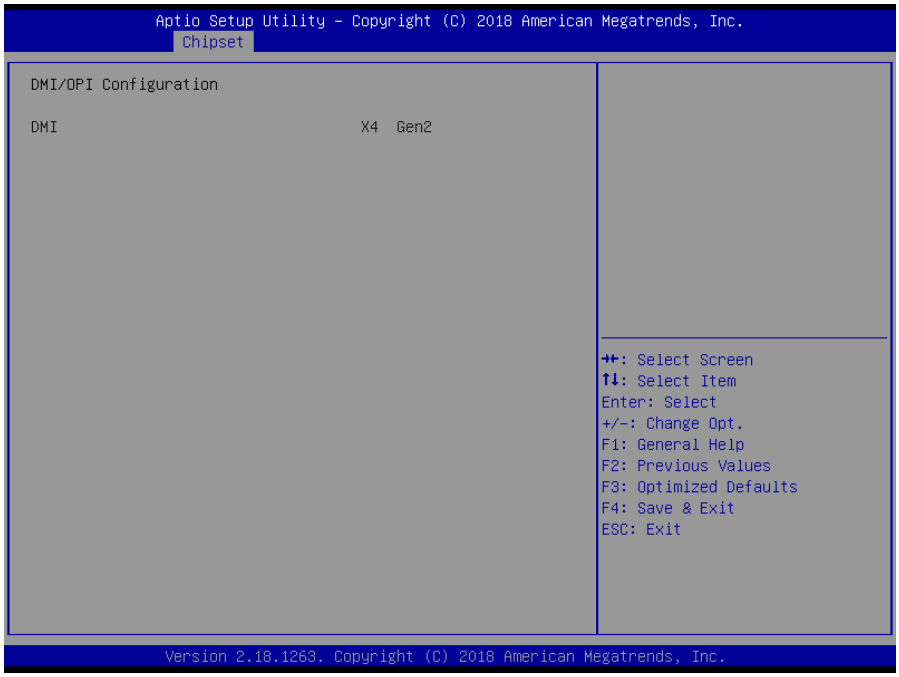


3.6.3.1.2 Graphics Configuration

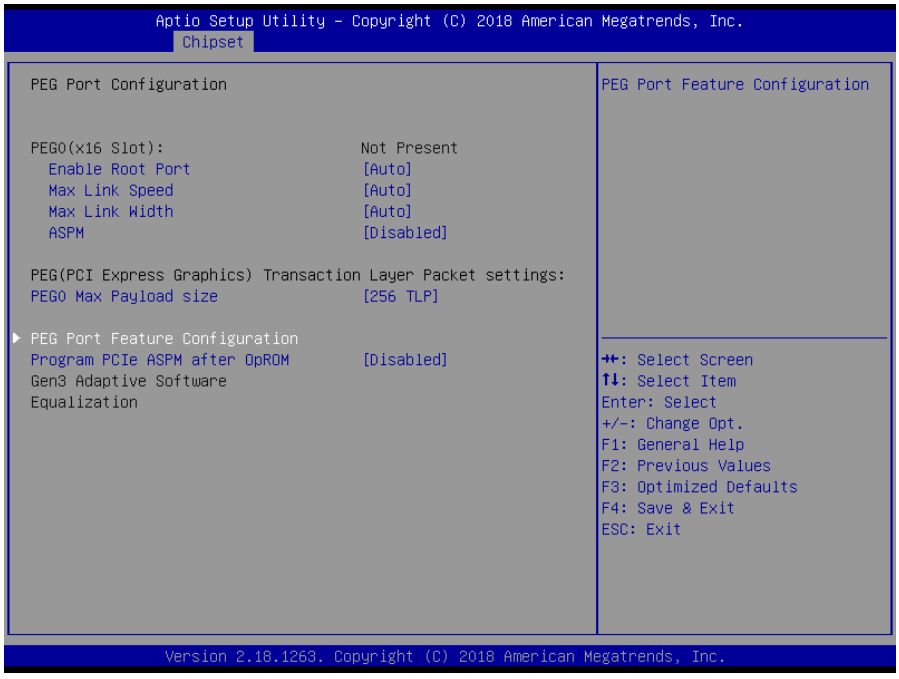


Item	Option	Description
Primary Display	Auto**[Default]** IGFX PEG PCI	Select which of IGFX/PEG/PCI Graphics device should be Primary Display Or select SG for Switchable Gfx.
Internal Graphics	Auto**[Default]** Disabled Enabled	Keep IGFX enabled based on the setup options.

3.6.3.1.3 DMI/OPI Configuration



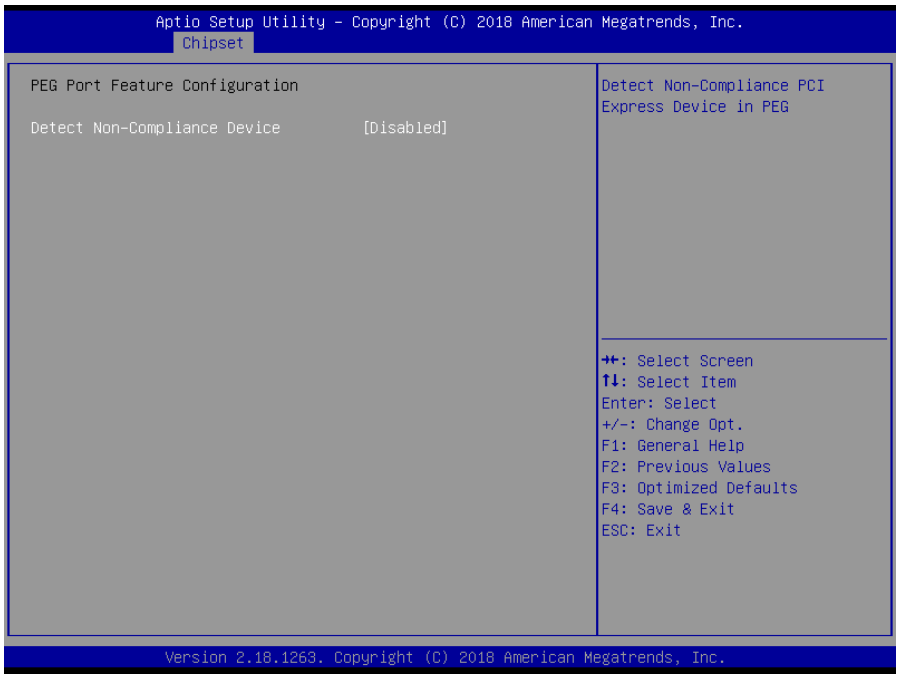
3.6.3.1.4 PEG Port Configuration



Item	Option	Description
Enable Root Port	Disabled Enabled Auto**[Default]**	Enable or Disable the Root Port.
Max Link Speed	Auto**[Default]** Gen1 Gen2 Gen3	Configure PEG 0:1:0 Max Speed.

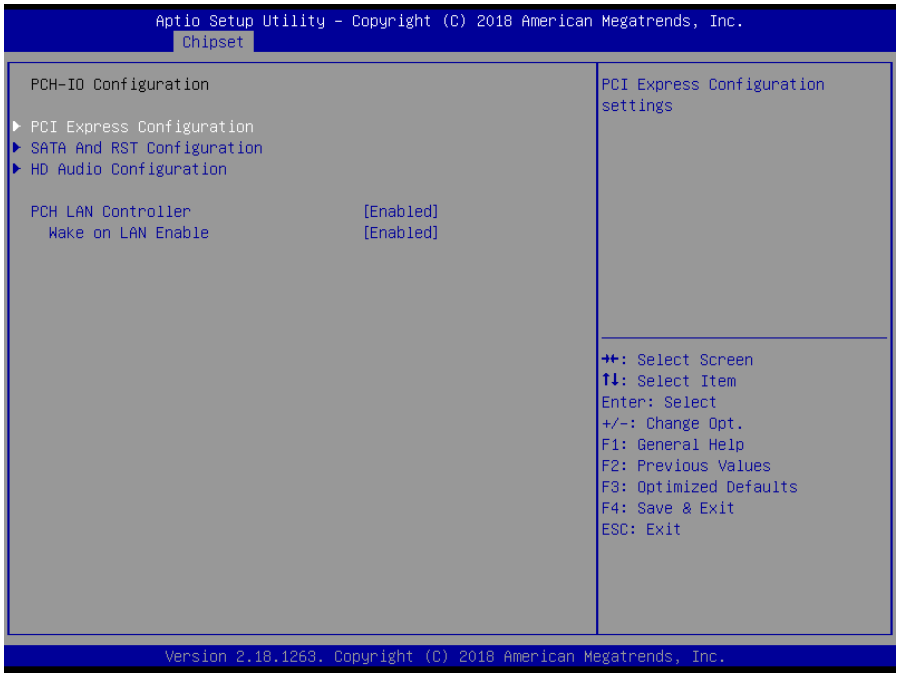
Max Link Width	Auto**[Default]** Force X1 Force X2 Force X4 Force X8	Force PEG link to retrain to X1/2/4/8
ASPM	Disabled**[Default]** Auto ASPM L0s ASPM L1 ASPM L0s L1	Control ASPM support for the PEG 0.This has no effect if PEG is not the currently active device.
PEG0 Max Payload size	128 TLP 256 TLP**[Default]**	Select PEG0 Max Payload Size;Choose Auto(Default Device Capability) or force to 128/256 Bytes
Program PCIe ASPM after OpROM	Disabled**[Default]** Enabled	Enabled: PCIe ASPM will be programmed after OpROM. Disabled: PCIe ASPM will be programmed before OpROM.

3.6.3.1.4.1 PEG Port Feature Configuration



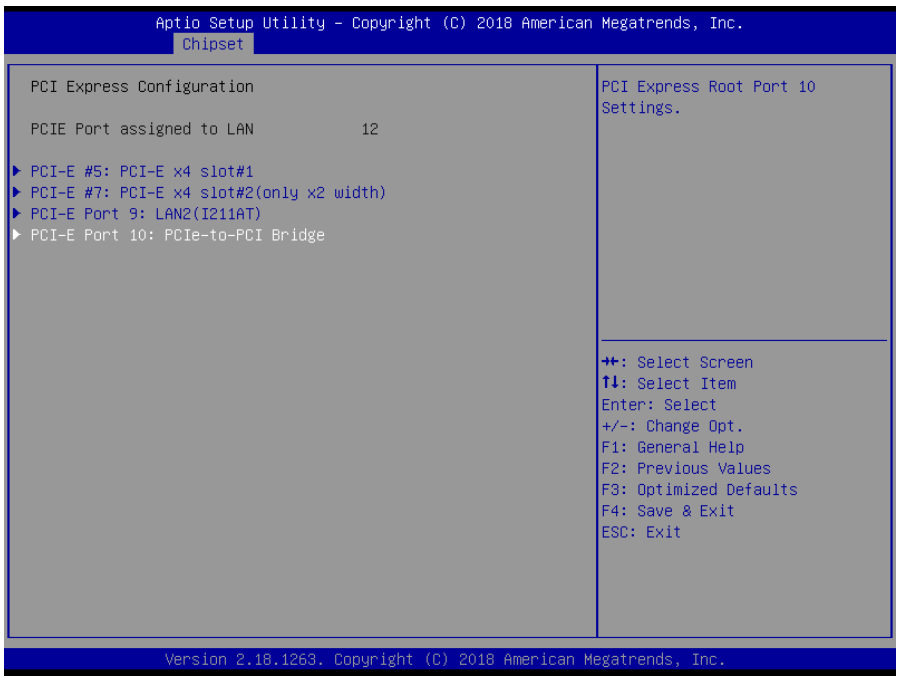
Item	Option	Description
Detect Non-Compliance Device	Disabled**[Default]** Enabled	Detect Non-Compliance PCI Express Device in PEG.

3.6.3.2 PCH-IO Configuration

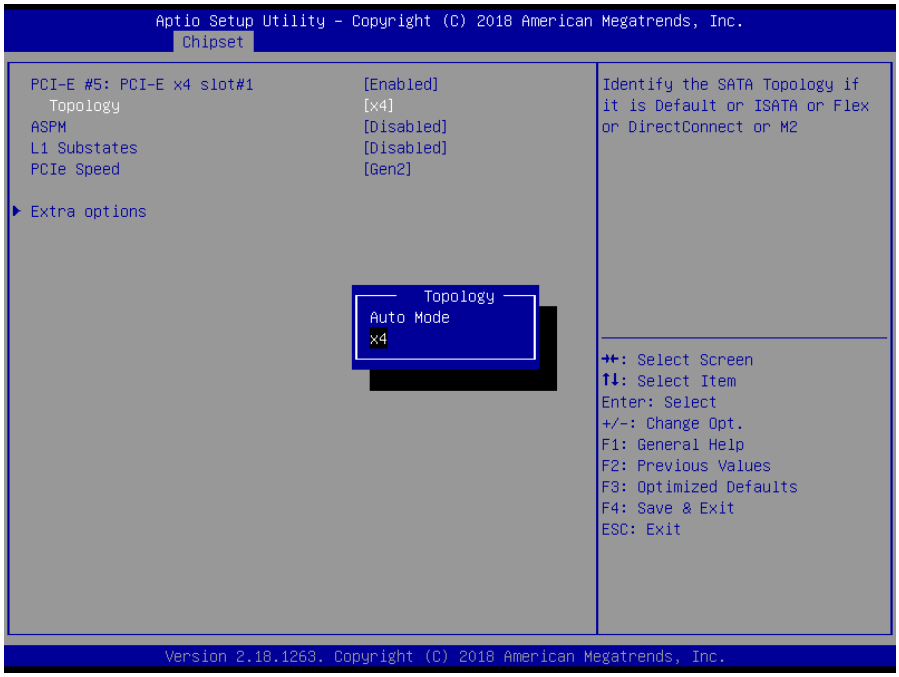


Item	Option	Description
PCH LAN Controller	Enabled**[Default]** Disabled	Enable/Disable onboard I219 Network Interface Controller.
Wake on LAN Enable	Enabled**[Default]** Disabled	Enable/Disable integrated LAN(I219) to wake the system.

3.6.3.2.1 PCI Express Configuration

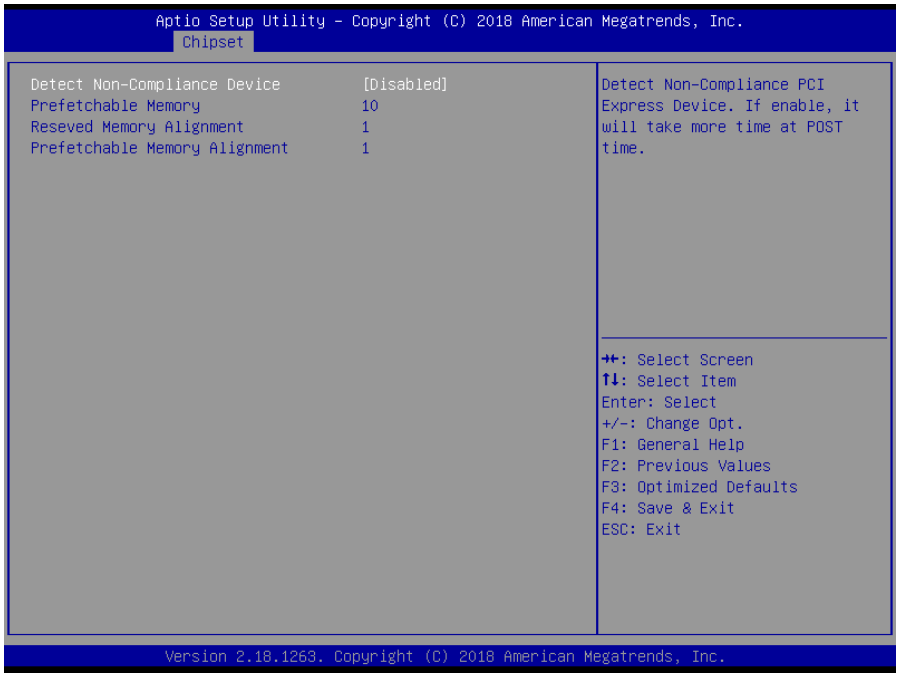


3.6.3.2.1.1 PCI-E #5: PCI-E x4 slot#1



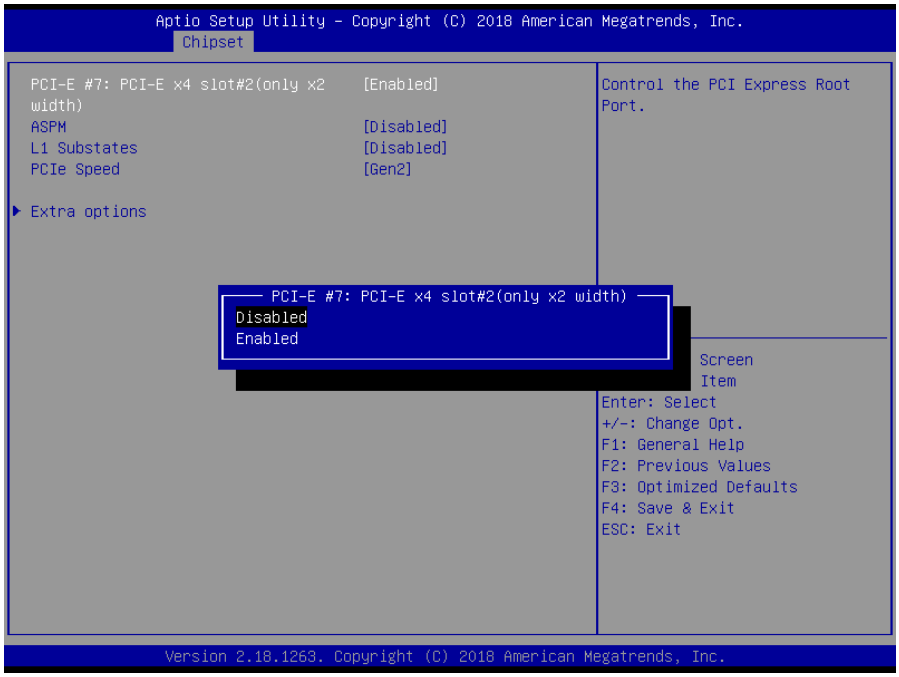
Item	Option	Description
PCI-E #5: PCI-E x4 slot#1	Enabled**[Default]**, Disabled	Control the PCI Express Root Port.
Topology	Auto Mode X4**[Default]**	Identify the SATA Topology if it is Default or ISATA or Flex or DirectConnect or M2
ASPM	Auto L0sL1 L1 L0s Disabled**[Default]**	Set the ASPM Level: Force L0s – Force all links to L0s State AUTO – BIOS auto configure DISABLE – Disables ASPM
L1 Substates	Disabled**[Default]** L1.1 L1.2 L1.1 & L1.2	PCI Express L1 Substates settings.
PCIe Speed	Gen1 Gen2**[Default]**	Configure PCIe Speed.

3.6.3.2.1.1.1 Extra options



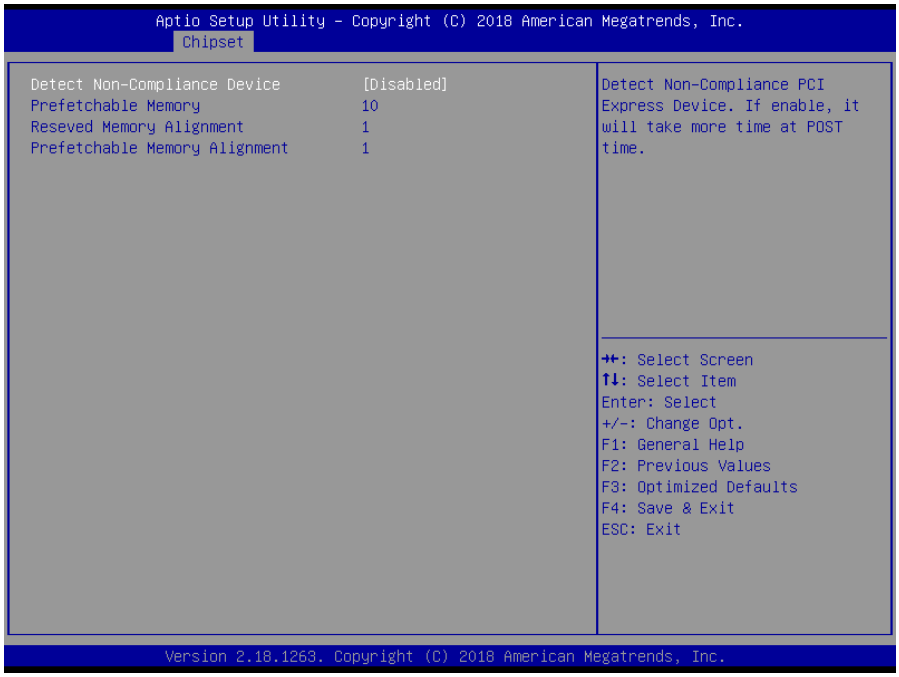
Item	Option	Description
Detect Non-Compliance Device	Disabled**[Default]**, Enabled	Detect Non-Compliance PCI Express Device. If enable, it will take more time at POST time.
Prefetchable Memory	10	Prefetchable Memory Range for this Root Bridge.
Reseved Memory Alignment	1	Reseved Memory Alignment(0-31 bits)
Prefetchable Memory Alignment	1	Prefetchable Memory Alignment (0-31 bits)

3.6.3.2.1.2 PCI-E #7: PCI-E x4 slot#2(only x2 width)



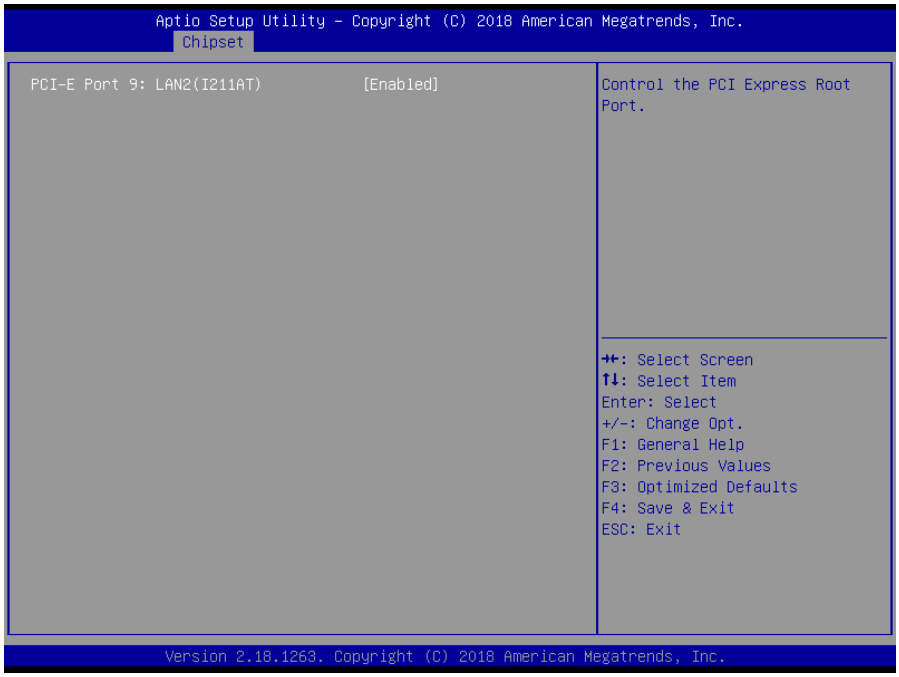
Item	Option	Description
PCI-E #7: PCI-E x4 slot#2(only x2 width)	Disabled Enabled**[Default]**,	Control the PCI Express Root Port.
ASPM	Disabled**[Default]** L0s L1 L0sL1 Auto	Set the ASPM Level: Force L0s – Force all links to L0s State AUTO – BIOS auto configure DISABLE – Disables ASPM.
L1 Substates	Disabled**[Default]** L1.1 L1.2 L1.1 & L1.2	PCI Express L1 Substates settings.
PCIe Speed	Gen1 Gen2 **[Default]**	Configure PCIe Speed.

3.6.3.2.1.2.1 Extra options



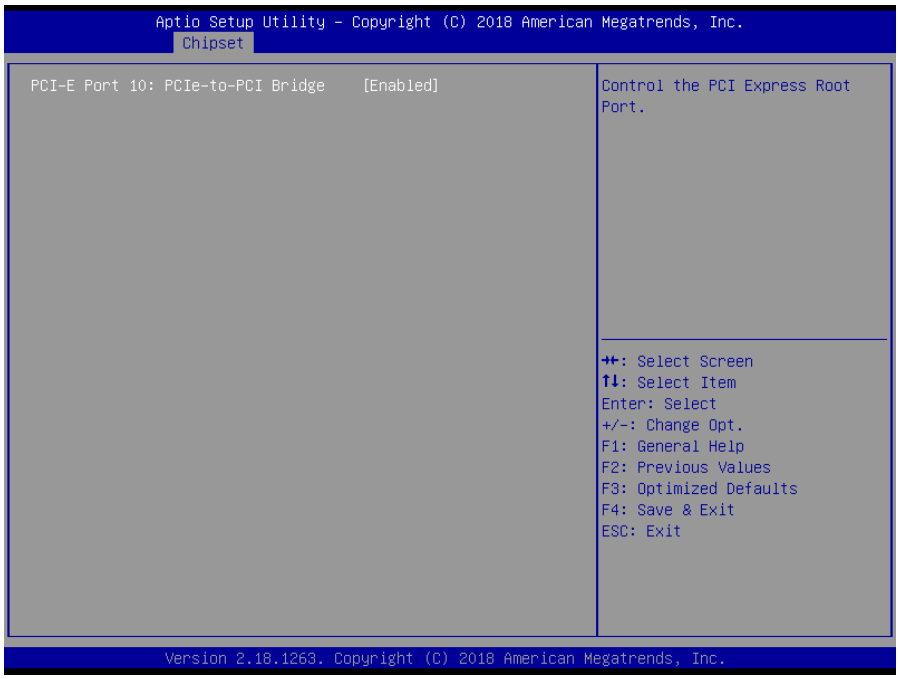
Item	Option	Description
Detect Non-Compliance Device	Disabled**[Default]**, Enabled	Detect Non-Compliance PCI Express Device. If enable, it will take more time at POST time.
Prefetchable Memory	10	Prefetchable Memory Range for this Root Bridge.
Reseved Memory Alignment	1	Reseved Memory Alignment(0-31 bits)
Prefetchable Memory Alignment	1	Prefetchable Memory Alignment (0-31 bits)

3.6.3.2.1.3 PCI-E Port 9:LAN(I211AT)



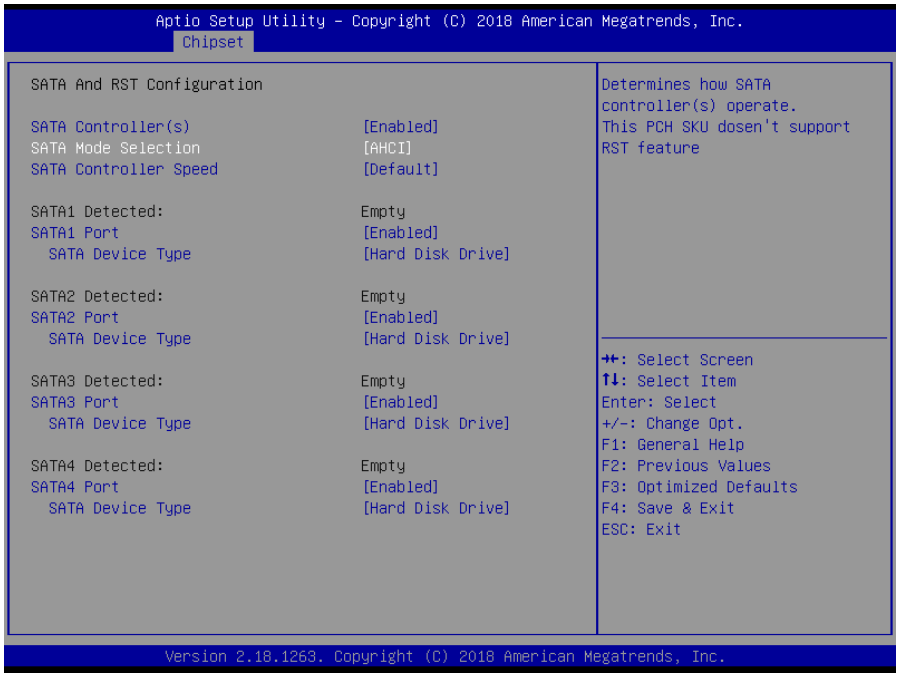
Item	Option	Description
PCI-E Port 9:LAN2(I211AT)	Enabled**[Default]**, Disabled	Control the PCI Express Root Port.

3.6.3.2.1.4 PCI-E Port 10:PCI-to-PCI Bridge



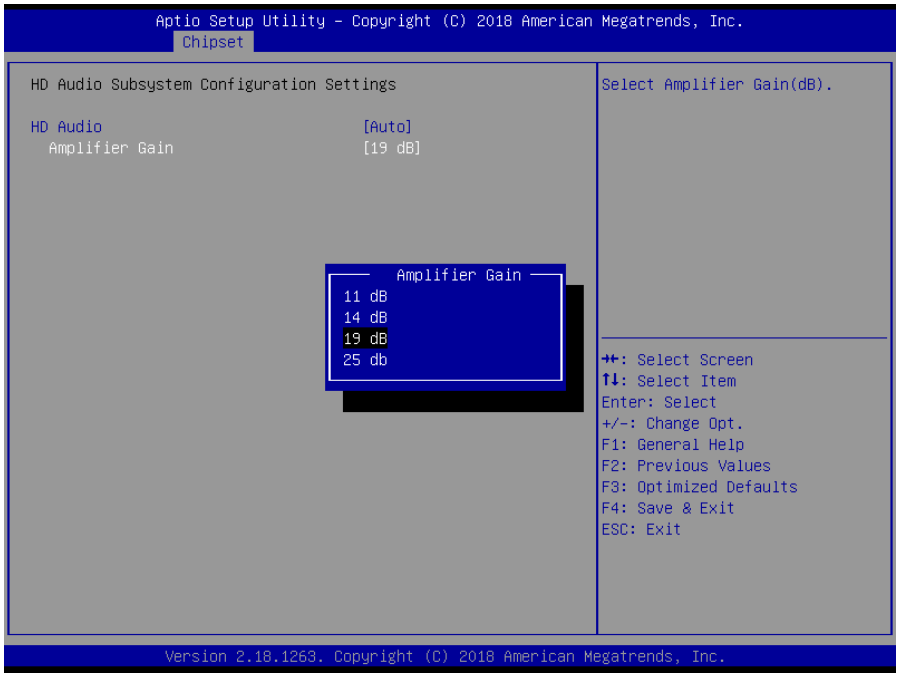
Item	Option	Description
PCI-E Port10:PCIe-to-PCI Bridge	Disabled Enabled**[Default]**,	Control the PCI Express Root Port.

3.6.3.2.2 SATA And RST Configuration



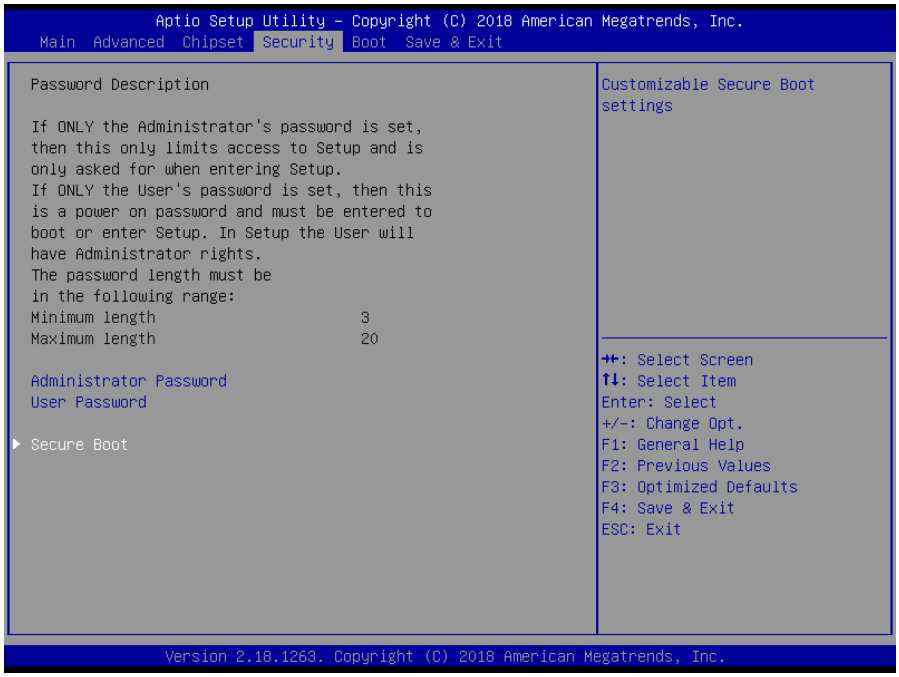
Item	Option	Description
SATA Controller(s)	Enabled**[Default]**, Disabled	Enable/Disable SATA Device.
SATA Mode Selection	AHCI**[Default]**, RAID	Determines how SATA controller(s) operate.
SATA Controller Speed	Default**[Default]**, Gen1 Gen2 Gen3	Indicates the maximum speed the SATA controller can support.
SATA1 Port	Disabled Enabled**[Default]**,	Enable or Disable SATA Port.
SATA Device Type	Hard Disk Drive**[Default]** Solid State Drive	Identify the SATA port is connected to Solid State Drive or Hard Disk Drive.
SATA2 Port	Disabled Enabled**[Default]**,	Enable or Disable SATA Port.
SATA Device Type	Hard Disk Drive**[Default]** Solid State Drive	Identify the SATA port is connected to Solid State Drive or Hard Disk Drive.
SATA3 Port	Disabled Enabled**[Default]**,	Enable or Disable SATA Port.
SATA Device Type	Hard Disk Drive**[Default]** Solid State Drive	Identify the SATA port is connected to Solid State Drive or Hard Disk Drive.
SATA4 Port	Disabled Enabled**[Default]**,	Enable or Disable SATA Port.
SATA Device Type	Hard Disk Drive**[Default]** Solid State Drive	Identify the SATA port is connected to Solid State Drive or Hard Disk Drive.

3.6.3.2.3 HD Audio Configuration



Item	Option	Description
HD Audio	Disabled Enabled, Auto**[Default]**	Control Detection of the HD-Audio device. Disabled = HDA will be unconditionally disabled Enabled = HDA will be unconditionally enabled Auto = HDA will be enabled if present, disabled otherwise.
Amplifier Gain	11 dB 14 dB**[Default]**, 19 dB 25 dB	Select Amplifier Gain(dB).

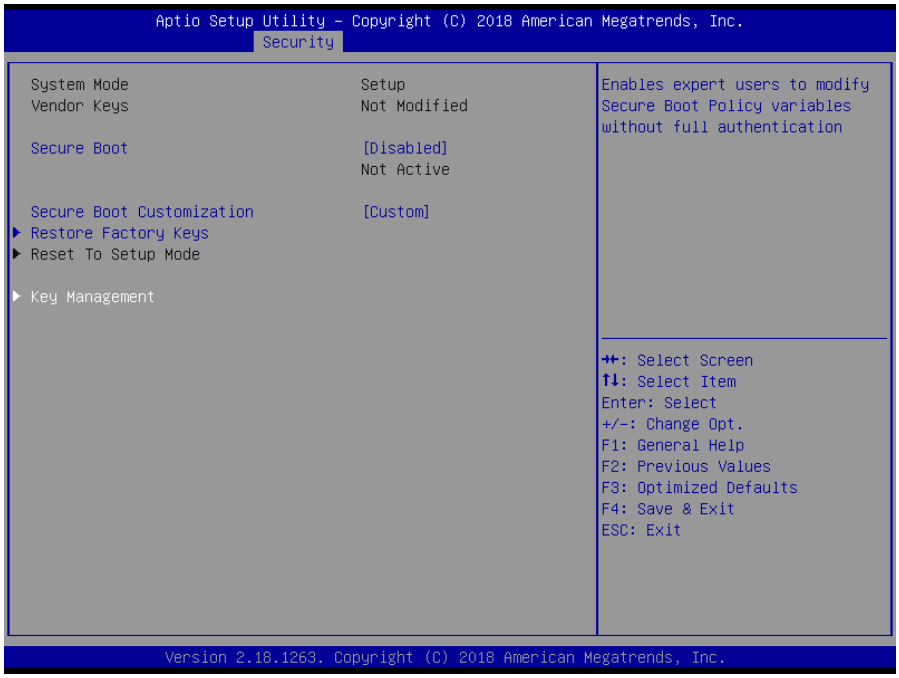
3.6.4 Security



- **Administrator Password**
  Set setup Administrator Password

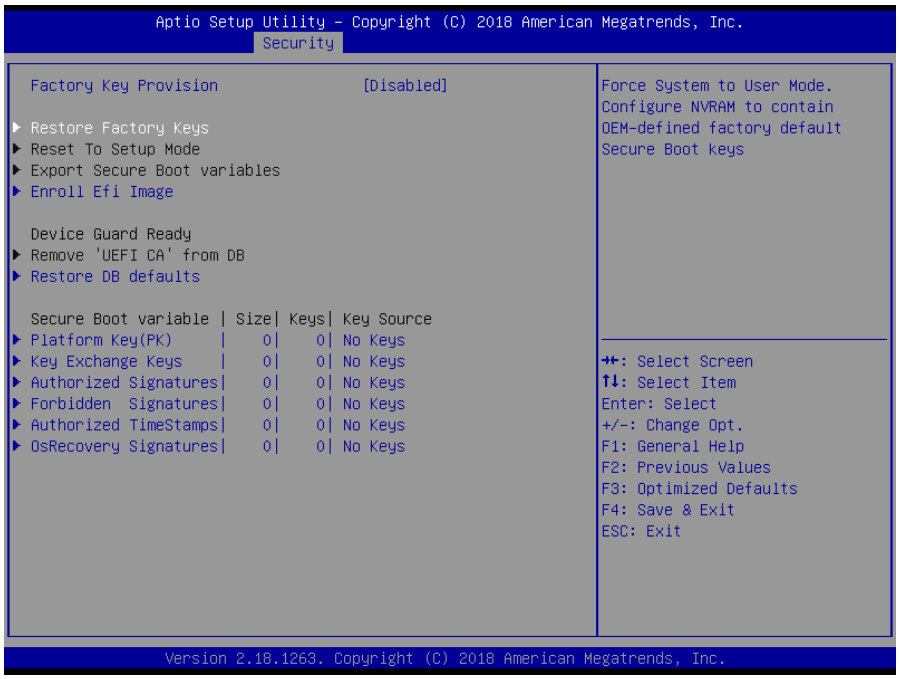
- **User Password**
  Set User Password

3.6.4.1 Secure Boot



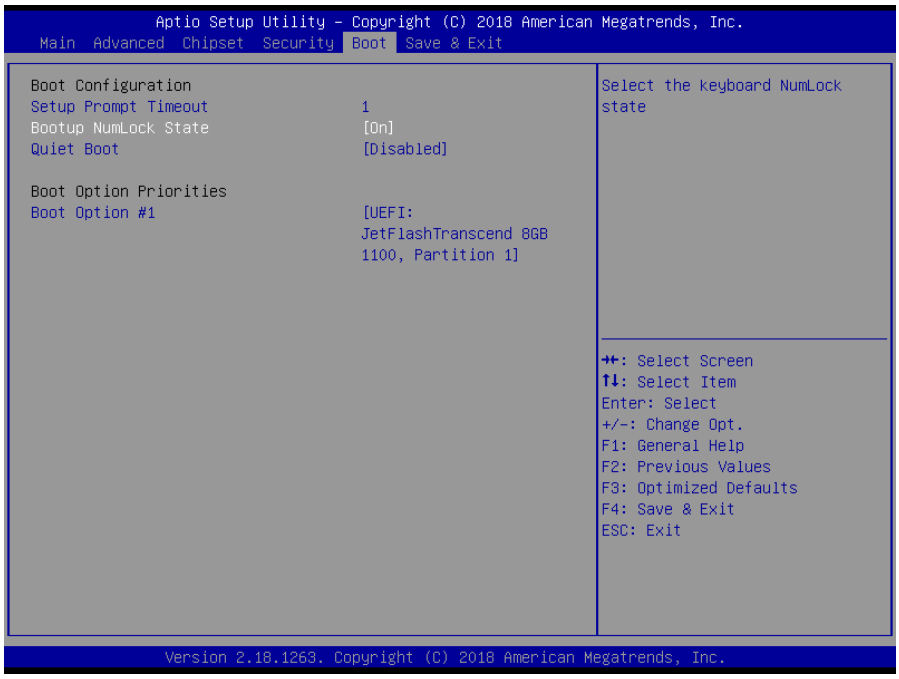
Item	Option	Description
Secure Boot	Disabled**[Default]**, Enabled	Secure Boot activated. When: Secure Boot is enabled Platform Key(PK) is enrolled, System mode is User/Deployed, and CSM is disabled
Secure Boot Customization	Standard Custom**[Default]**,	Customizable Secure Boot mode: In Custom mode Secure Boot Policy variables can be configured by a physically present user without full authentication
Restore Factory keys	Force System to User Mode.Configure NVRAM to contain OEM-defined factory default Secure Boot keys	

3.6.4.1.1 Key Management



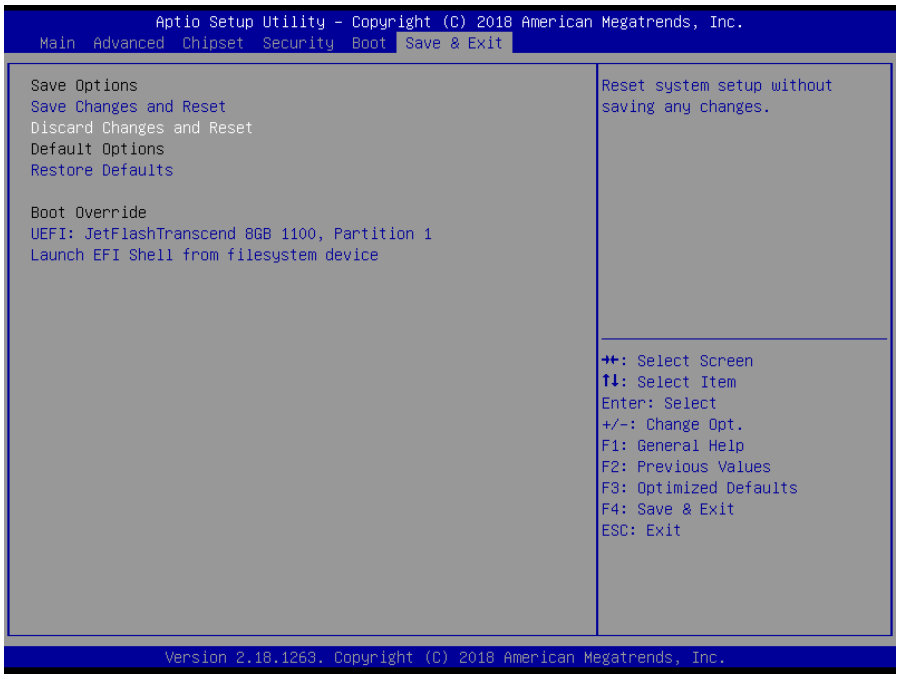
Item	Option	Description
Factory Key Provision	Disabled**[Default]** Enabled,	Provision factory default keys on next re-boot only when System in Setup Mode.
Restore Factory Keys	Force System to User Mode.Configure NVRAM to contain OEM-defined factory default Secure Boot keys	
Enroll Efi Image	Allow the image to run in Secure Boot mode. Enroll SHA256 Hash certificate of a PE image into Authorized Signature Database(db)	
Restore DB defaults	Restore DB variable to factory defaults	

3.6.5 Boot



Item	Option	Description
Setup Prompt Timeout	1	Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting.
Bootup NumLock State	On**[Default]** Off	Select the keyboard NumLock state
Quiet Boot	Disabled**[Default]** Enabled	Enables or disables Quiet Boot option
Boot Option #1	Sets the system boot order.	

3.6.6 Save and exit



3.6.6.1 Save Changes and Reset

Reset the system after saving the changes.

3.6.6.2 Discard Changes and Reset

Reset the system setup without saving any changes.

3.6.6.3 Restore Defaults

Restore/Load Default values for all the setup options.

3.6.6.4 Launch EFI Shell from filesystem device

Attempts to Launch EFI Shell application (Shell.efi) from one of the available filesystem devices.

4. Drivers Installation

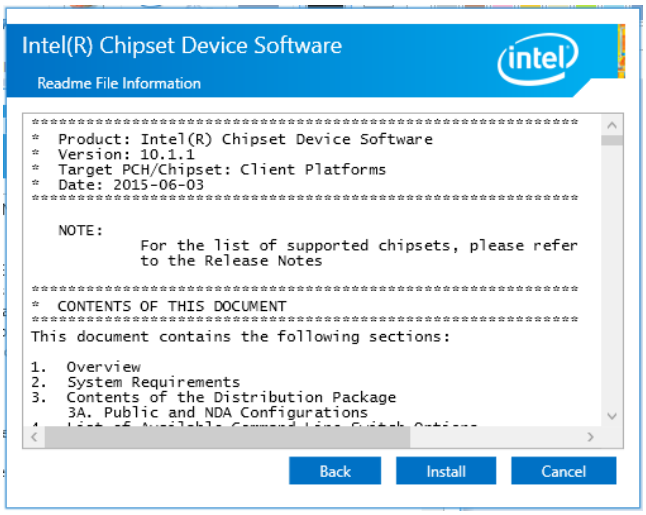


Note: Installation procedures and screen shots in this section are for your reference and may not be exactly the same as shown on your screen.

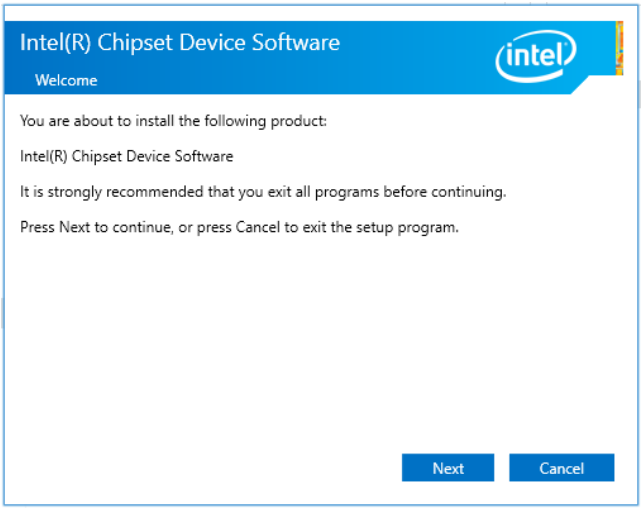
4.1 Install Chipset Driver

Insert the Supporting DVD-ROM to DVD-ROM drive, and it should show the index page of Avalue's products automatically. If not, locate Index.htm and choose the product from the menu left.

Note: The installation procedures and screen shots in this section are based on Windows 10 operation system. If the warning message appears while the installation process, click Continue to go on.



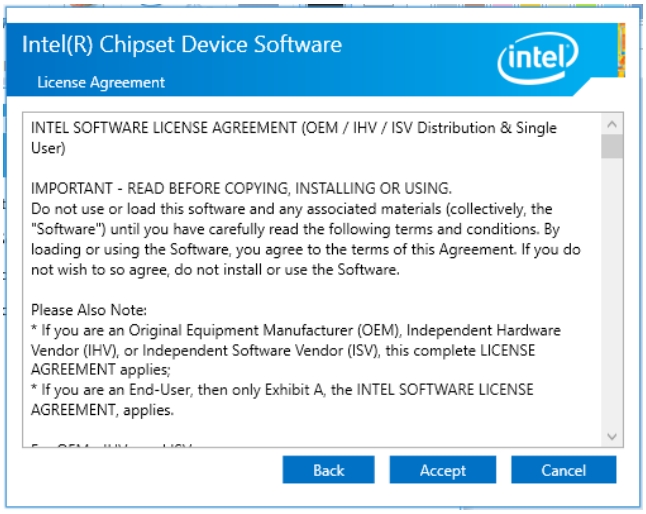
Step 3. Click **Install**.



Step1. Click **Next**.



Step 4. Complete setup.

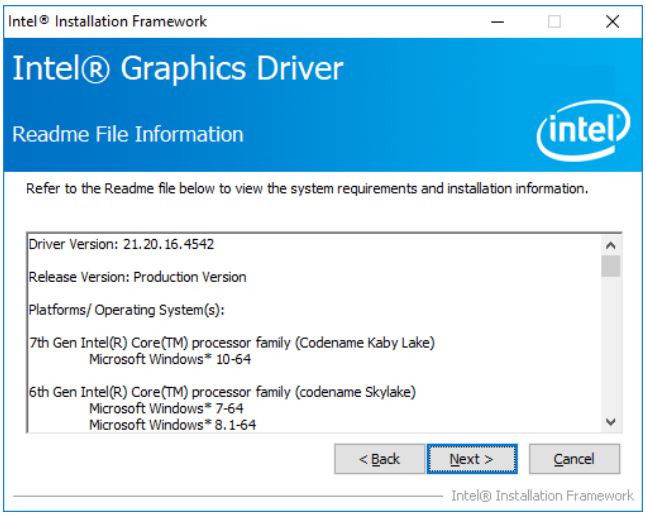


Step 2. Click **Accept**.

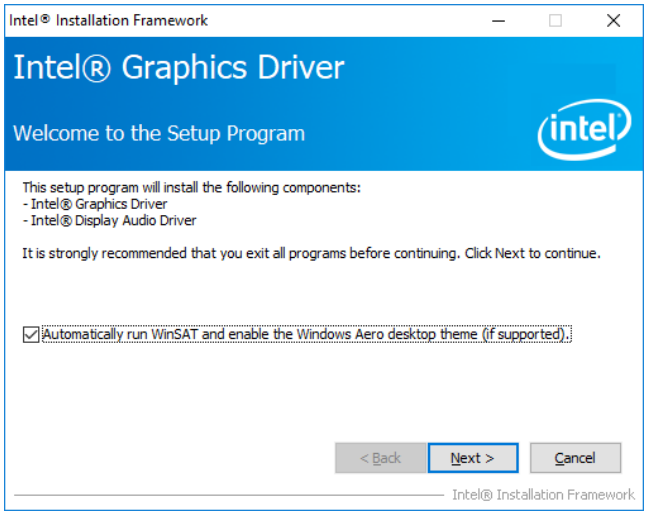
4.2 Install VGA Driver

Insert the Supporting DVD-ROM to DVD-ROM drive, and it should show the index page of Avalue's products automatically. If not, locate Index.htm and choose the product from the menu left.

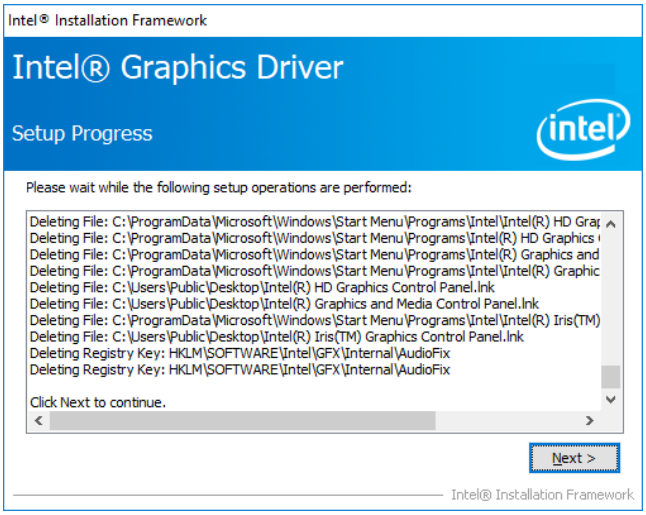
Note: The installation procedures and screen shots in this section are based on Windows 10 operation system.



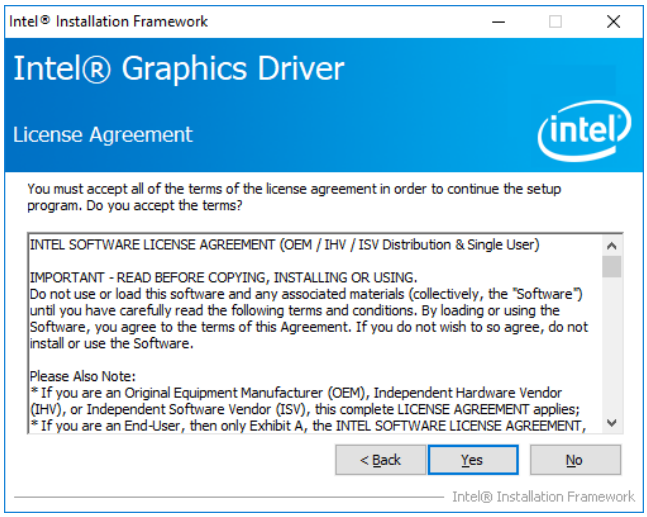
Step 3. Click **Next.**



Step 1. Click **Next** to continue installation.

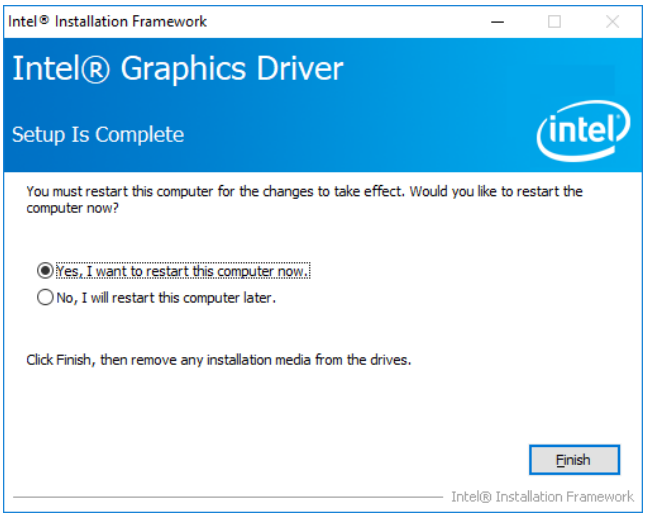


Step 4. Click **Next**.



Step 2.

Click **Yes** to accept license agreement.

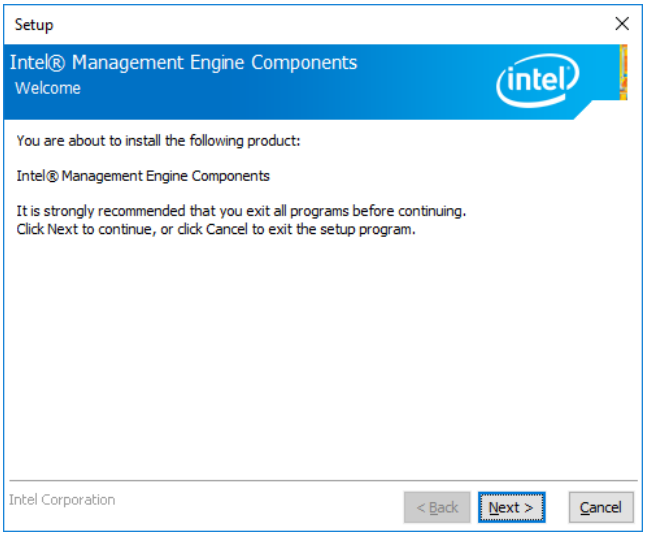


Step 5. Click **Finish** to complete setup.

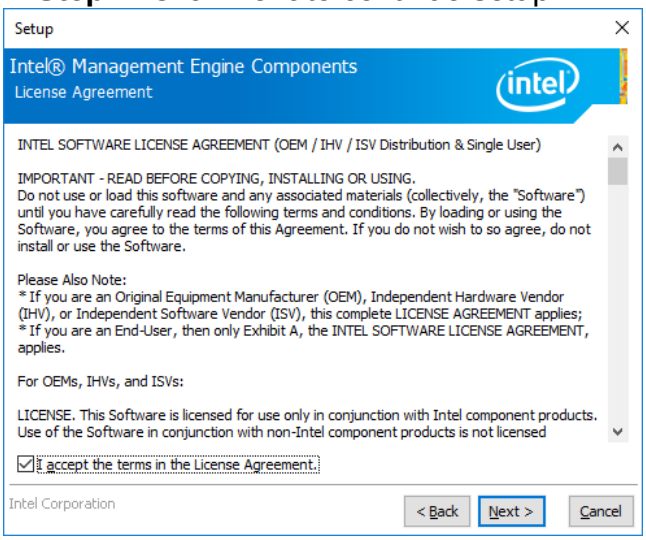
4.3 Install SOL Driver

Insert the Supporting CD-ROM to CD-ROM drive, and it should show the index page of Avalue's products automatically. If not, locate Index.htm and choose the product from the menu left.

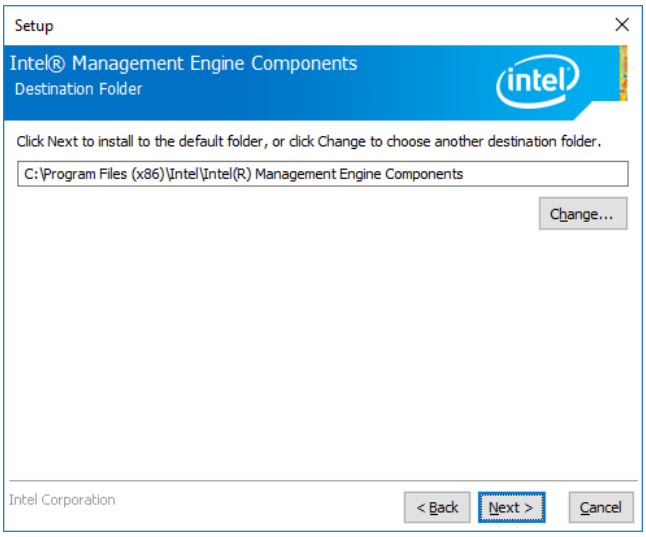
Note: The installation procedures and screen shots in this section are based on Windows 10 operation system.



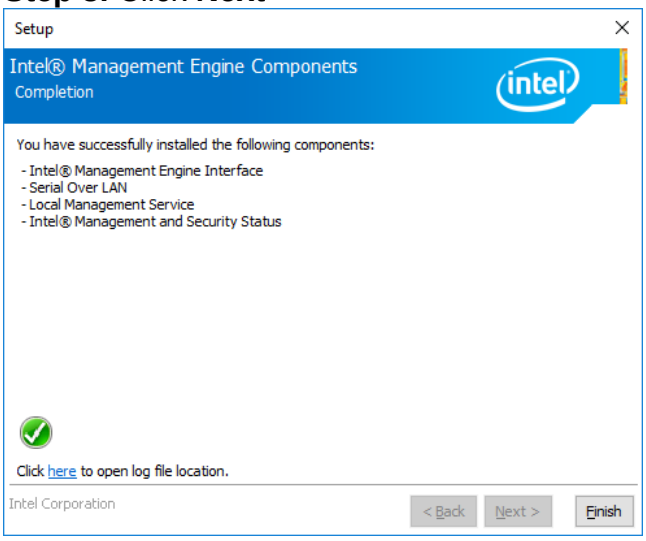
Step 1. Click **Next** to continue setup.



Step 2. Click **Next**.



Step 3. Click **Next**

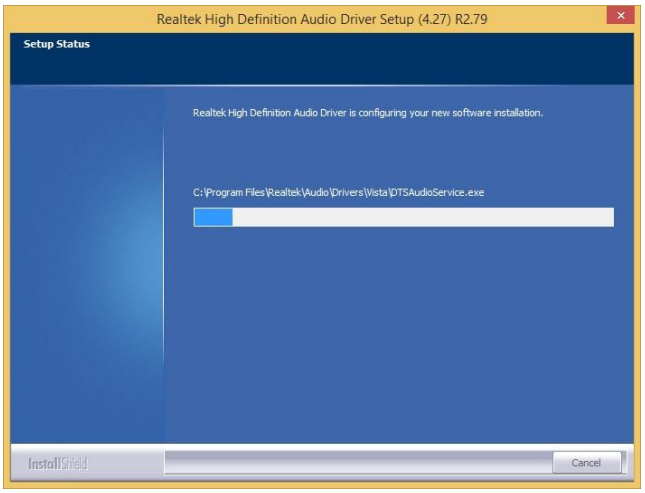


Step 4. Click **Finish** to complete the setup

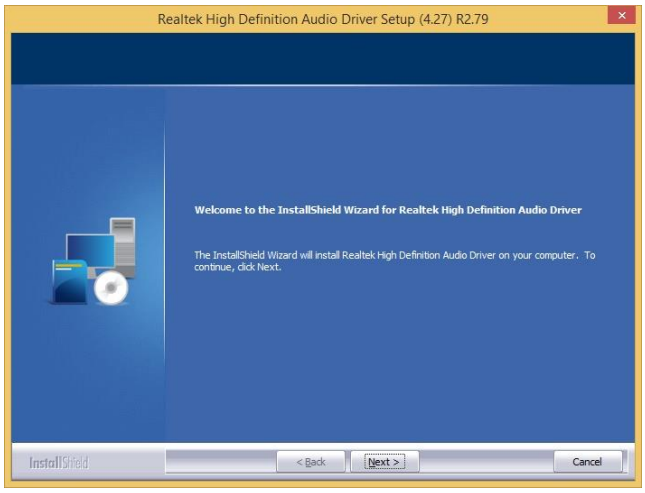
4.4 Install Audio Driver (For Realtek ALC892 HD Audio)

Insert the Supporting DVD-ROM to DVD-ROM drive, and it should show the index page of Avalue's products automatically. If not, locate Index.htm and choose the product from the menu left.

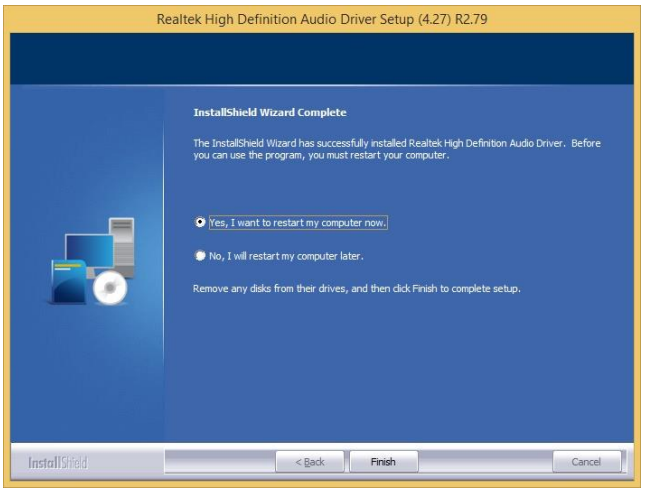
Note: The installation procedures and screen shots in this section are based on Windows 10 operation system. If the warning message appears while the installation process, click Continue to go on.



Step2. installing



Step1. Click **Next** to Install.

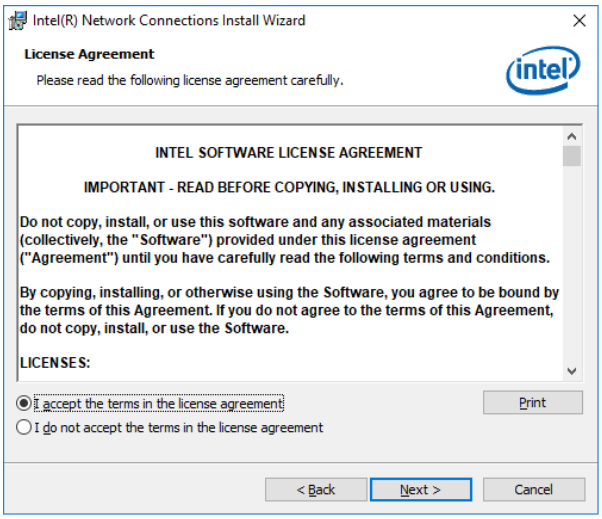


Step 3. Select **Finish** to complete Installation.

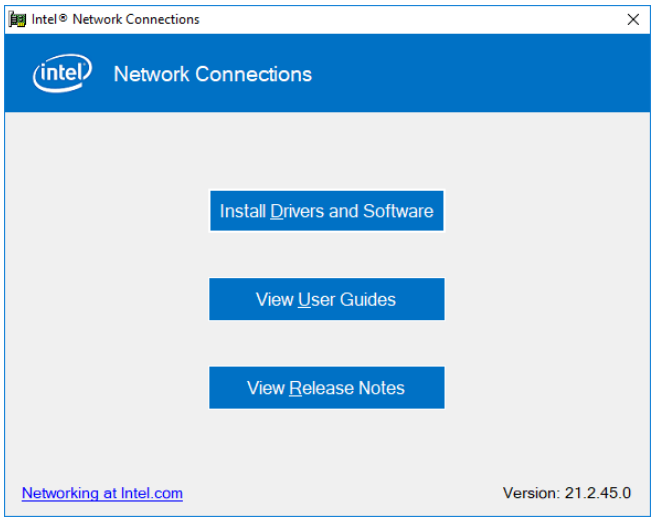
4.5 Install LAN Driver

Insert the Supporting DVD-ROM to DVD-ROM drive, and it should show the index page of Avalue's products automatically. If not, locate Index.htm and choose the product from the menu left.

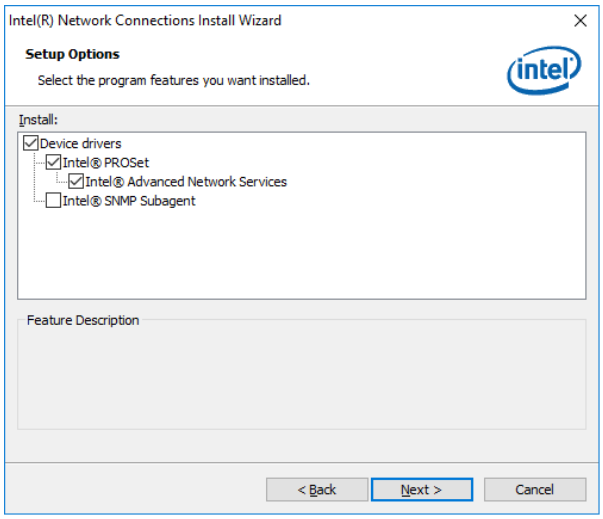
Note: The installation procedures and screen shots in this section are based on Windows 10 operation system.



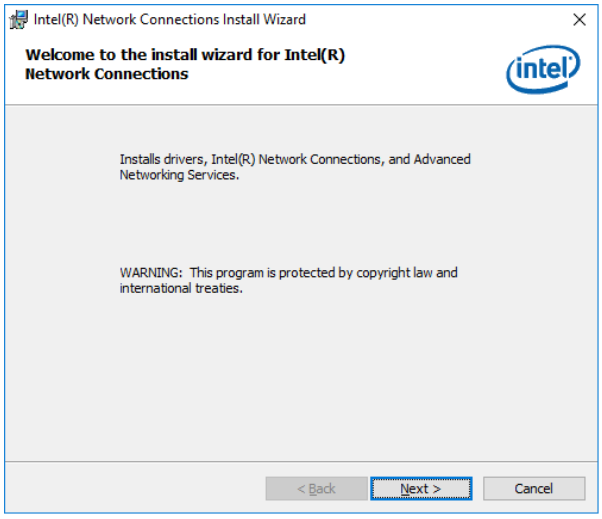
Step 3. Click **Next**.



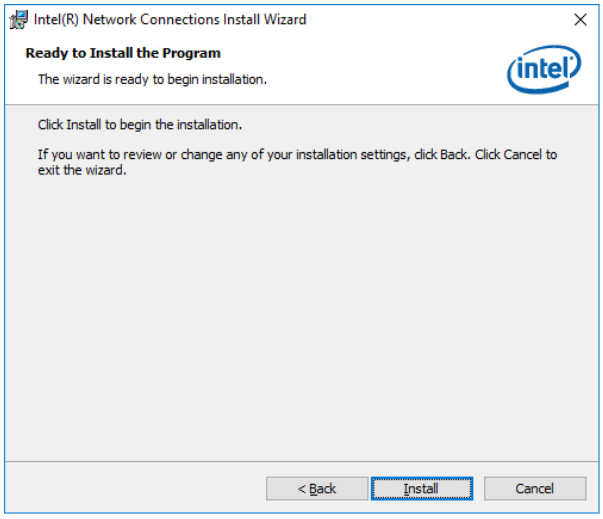
Step 1. Click **Install Drivers and Software**.



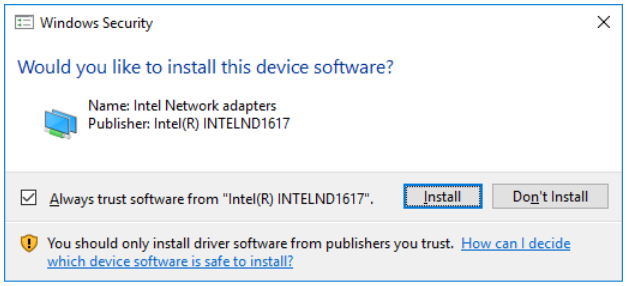
Step 4. Click **Next**.



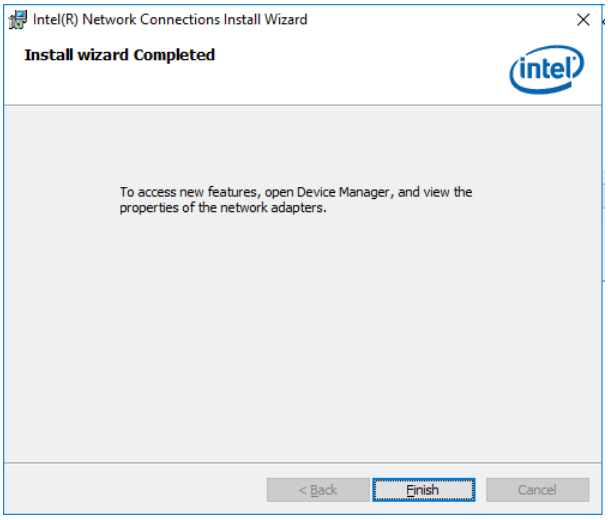
Step 2. Click **Next**.



Step 5. Click **Install**.



Step 6. Click **Install**.

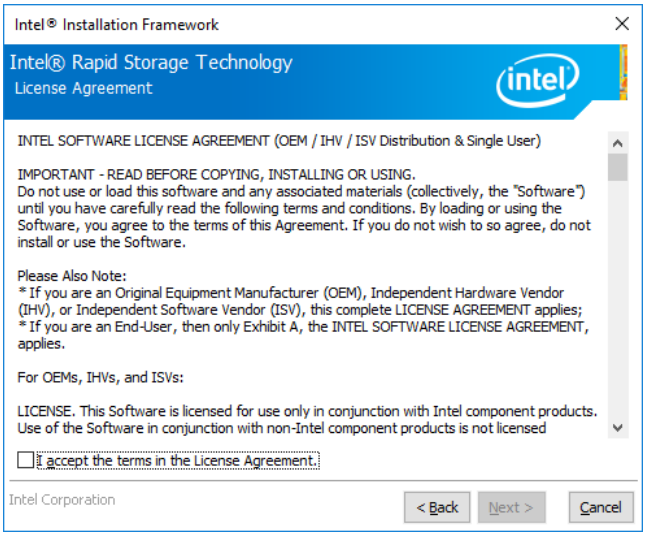


Step 7. Click Finish to complete setup.

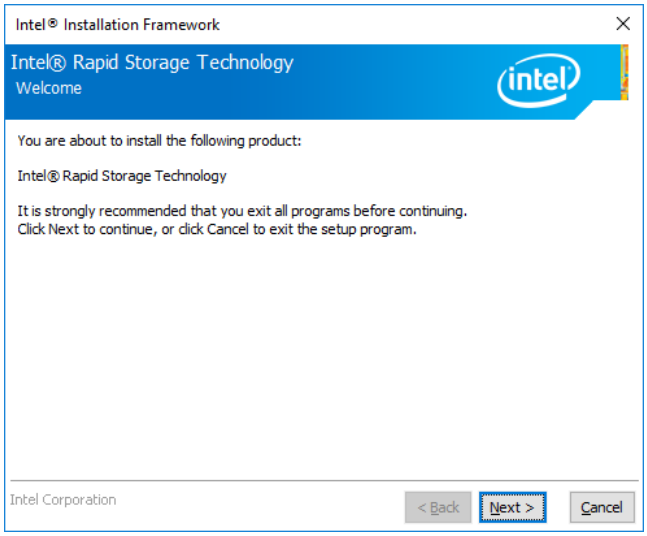
4.6 Install RST Driver

Insert the Supporting DVD-ROM to DVD-ROM drive, and it should show the index page of Avalue's products automatically. If not, locate Index.htm and choose the product from the menu left.

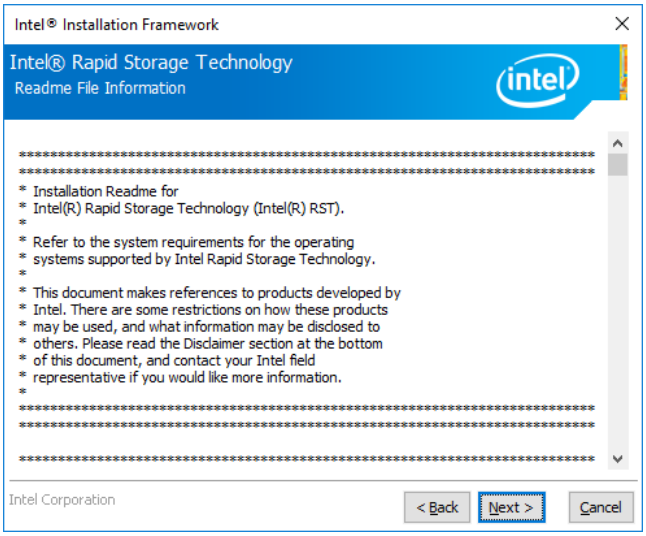
Note: The installation procedures and screen shots in this section are based on Windows 10 operation system.



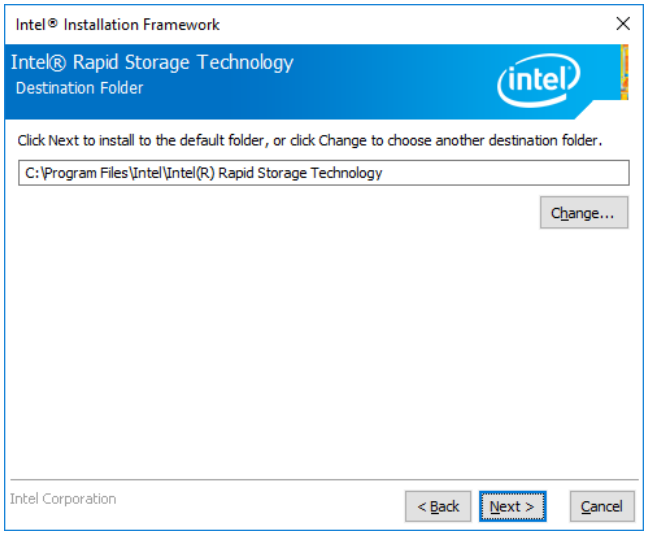
Step 2. Click **Next**.



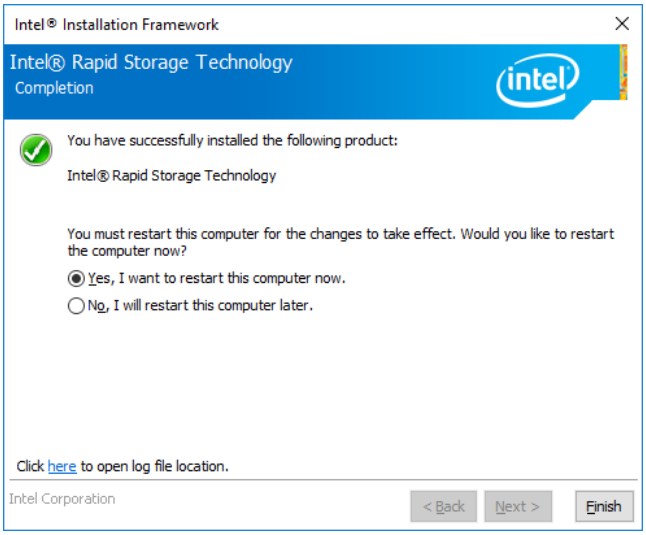
Step 1. Click **Next** to continue installation.



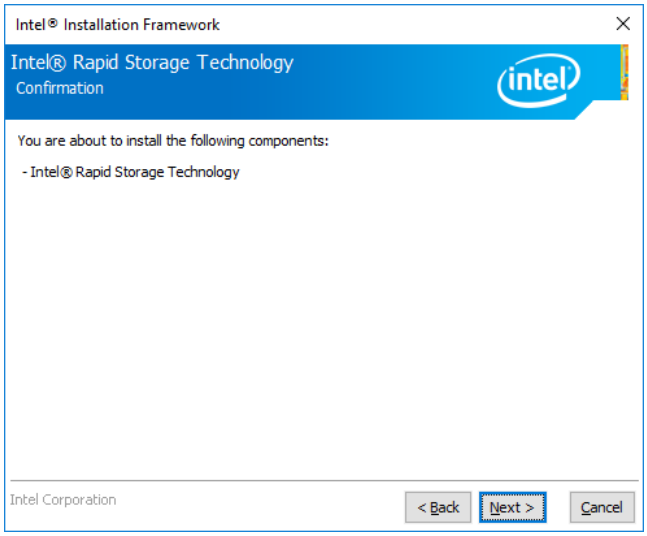
Step 3. Click **Next.**



Step 4. Click **Next**.

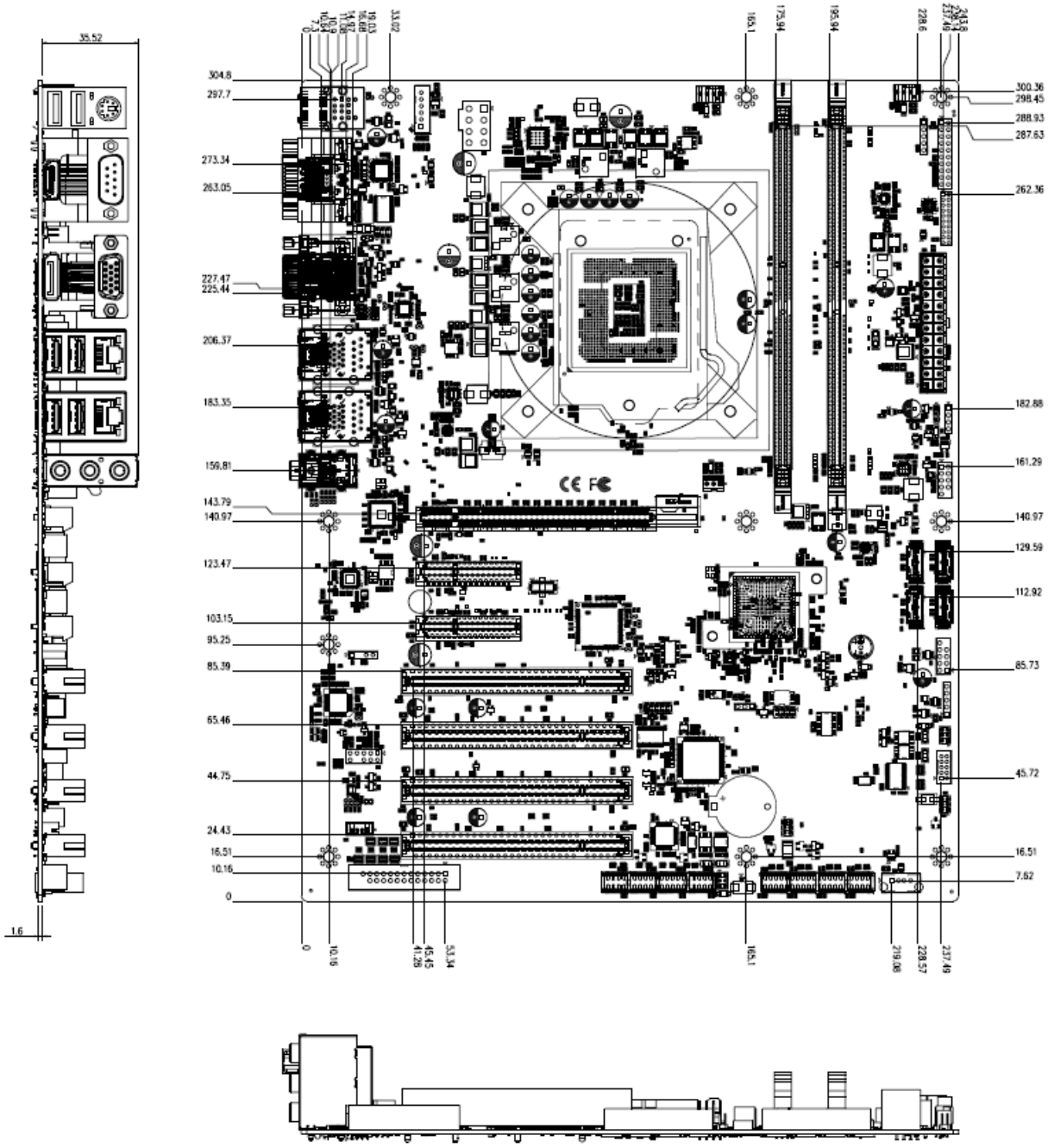


Step 6. Click **Finish** to complete setup.

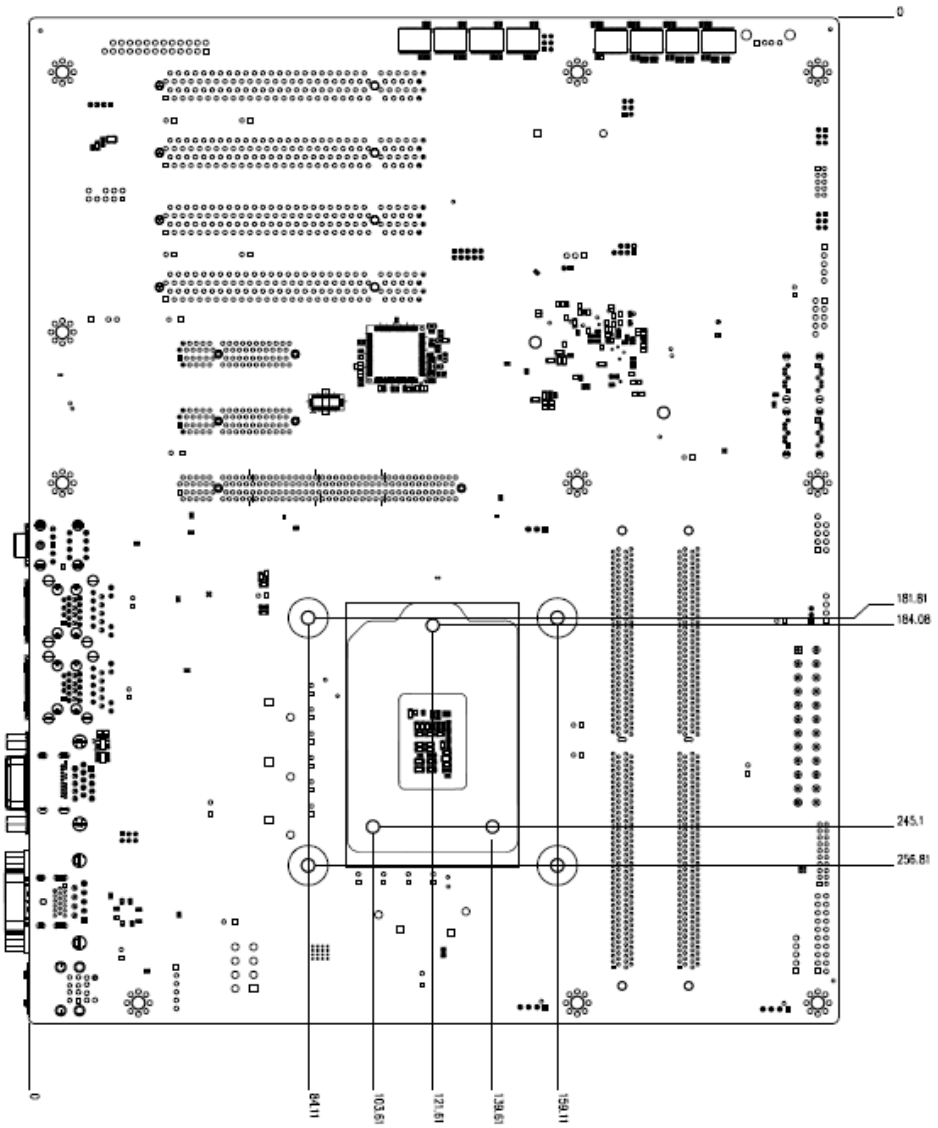


Step 5. Click **Next**.

5. Mechanical Drawing


35.52
1.6
304.8
297.7
273.34
263.05
227.47
225.44
206.37
183.35
159.81
143.79
140.97
123.47
103.15
95.25
85.39
65.46
44.75
24.43
16.51
10.16
0
33.02
165.1
175.94
195.94
228.6
237.49
300.36
298.45
288.93
287.63
262.36
182.88
161.29
140.97
129.59
112.92
85.73
45.72
16.51
7.62
0
10.16
41.28
45.45
53.34
165.1
219.08
228.57
237.49

Unit: mm



Unit: mm